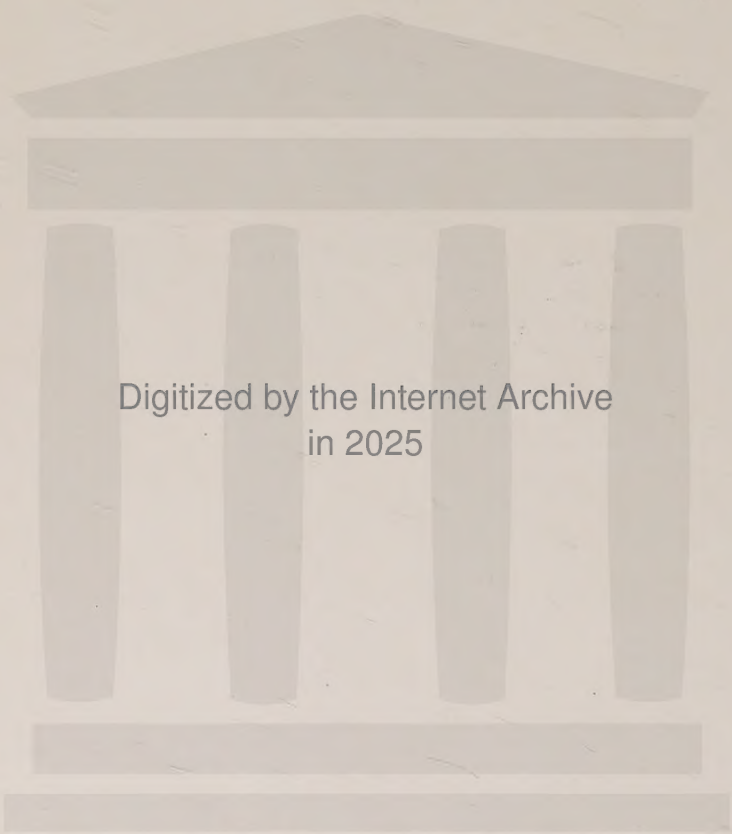
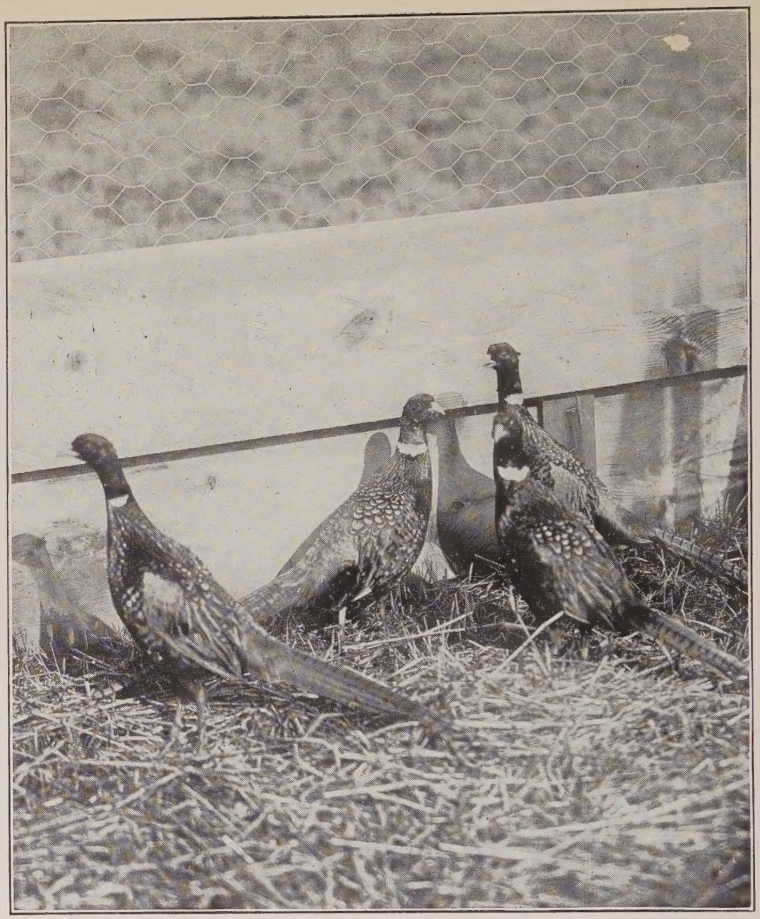
AMERICAN
PHEASANT
BREEDING
AND
SHOOTING

QUARLES



"When we have in America 100,000 game keepers, game will be far more plentiful and the game laws far better observed."—*Edward Howe Forbush.*



Ringneck cock pheasants photographed on New York State Game Farm at Sherburne.

American Pheasant Breeding and Shooting

By

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American Game Protective Association

With 50 Halftone Illustrations

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To

FREDERIC C. WALCOTT

A sincere friend of wild life and an ardent worker for its conservation; but for whose support and encouragement this book would not have been written,

This Volume is Dedicated with Appreciation.

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PREFACE

A CONVICTION that the ringneck pheasant is certain enormously to increase in popularity both for sporting and food purposes, combined with the fact that there exists no comprehensive treatment of the methods employed in this country in the breeding and shooting of this bird, furnishes my excuse for writing this book.

The conviction is due in large part to the recent liberalization of the laws in several states permitting captive-bred pheasants to be killed in any manner at any time, under certain reasonable restrictions. To this may be added the fact that a method has been devised which makes possible the shooting of captive-bred birds on a comparatively small preserve without driving off the birds that escape the guns.

The present work was begun merely as a pamphlet on the breeding of the ringneck, but I became so interested in my subject and so convinced that fuller treatment might be worth while that the scheme of the book was enlarged to include the presentation of the essential facts having to do with the breeding, shooting, preserving and marketing of the ringneck. Special attention has been given to the organization of clubs for pheasant shooting, for it is believed that it is, in large measure, through this action that the pheasant is destined to serve sport to an extent that is now little realized.

The overflow from club and private preserves almost invariably results in the stocking of public covers in the neighborhood, so that the sportsman who can afford neither club nor private preserve is pretty certain to be the gainer where either of these is established.

It is felt that the book treats its subject in a much more comprehensive, sequential and detailed manner than has before been attempted in this country.

In the course of a report on the pheasant made in 1913 to the Massachusetts legislature by the commissioners on fisheries and game of that state, these words are used:

"As in the case of poultry, the number of persons who can rear pheasants by the thousand is limited when compared with those who are able to raise a small number. Therefore, if the pheasant is to be maintained, the supply must come from a large number of small breeders rather than from wholesale production on a large scale."

The writer is in accord with these sentiments and, in writing this book, has endeavored to keep particularly in mind the small breeder—the farmer's wife with a desire for more pin money and the city man with a few acres in the country maintained chiefly for recreation.

In an endeavor to secure clarity of treatment and to present the various phases of pheasant breeding in their logical sequence, it is assumed that some one wholly without experience decides to purchase a dozen birds and make a try at this very fascinating game. Every essential step, from the securing of the license to the bringing to maturity of chicks hatched from eggs laid by the breeding stock that has been purchased, is given in turn. Particular attention has been given to details and where coops and pens or other equipment are mentioned, complete measurements with full information regarding construction have been given. Half-tones have been employed profusely, in the effort to show every important step in pheasant breeding and shooting and to give adequate illustration to all equipment that is mentioned.

While the small breeder has been specially kept in mind, at all important points the treatment has been elaborated to meet the requirements of the man who wishes to go into pheasant breeding on a large scale.

CHAPTER I

Why Breed Pheasants?

In an article entitled "Game Breeding in the United States," published in the March number of *The Field*, Illustrated, of New York City, I endeavored to show that the prodigal waste of the country's original profusion of wild life, combined with the almost universal adoption of laws prohibiting or greatly restricting the sale and transportation of wild game, had brought about a state of affairs in which one might reasonably expect a widespread extension of efforts at breeding game in captivity. These efforts will likely be directed both toward stocking depleted covers and meeting the demand for game birds for edible purposes.

STATES SET THE PACE.—The establishment within the past few years of game farms by the states of Massachusetts, Connecticut, New York, New Jersey, Louisiana, Kentucky, Oregon, California, Wisconsin, *Washington and Iowa, and the action of other states in purchasing birds in large numbers for stocking purposes, bear witness to the increasing activities in game breeding. A state game farm has been authorized for Michigan. Records of various states show an increasing number of individuals who are taking out licenses which permit them to breed game in captivity and laws are gradually being enacted in the more progressive states which will encourage enterprise in this direction.

RINGNECK LOGICAL CHOICE FOR BREEDING.—In the article above referred to, I showed that of the upland game birds the ringneck pheasant promises most successful results at the present time because for it alone of all the upland species has been evolved a formula for successful breeding in large numbers. At present it is the bird most largely produced by both state and private breeding establishments; it has proved its adaptability to the conditions encountered in large areas of the United States; a brace of these birds will furnish an ample supply of splendid game flesh for the average family and, finally, while not the equal of our bobwhite, ruffed grouse or prairie chicken as a game bird, it furnishes satisfactory sport to thousands of gunners today who must content themselves with this species or nothing. The American Game Protective Association believes strongly in the bobwhite and grouse and is doing all it can to encourage experiments in the breeding of these species in captivity but, in the present state of affairs, it is convinced that every encouragement should be given the production of the ringneck, too.

*Washington has established no game farm as a state but its principal county, King, has one which turns out as many birds as the average state farm.

NEW YORK'S IMPRESSIVE EFFORTS.—The production record of the New York State Game Farm at Sherburne during the six years of its operation is as follows:

	Eggs	Ringneck Pheasants Reared
1910	6,500	1,200
1911	12,945	2,533
1912	12,681	3,409
1913	25,000	5,000
1914	31,000	4,500
1915 (a)	58,000	8,500
	146,126	25,142

(a)—Includes production of recently established farm at Brownville, Jefferson County.

Superintendent Harry T. Rogers states that the sum of 3,000 should be added to the total given for ringneck pheasants above, representing birds distributed late in the year by the state's game protectors, which have been sent out too late to be included in the annual reports of the game farm. This would bring the total to 28,142, an average of nearly 5,000 birds a year.

The tabulated figures given above represent eggs distributed among farmers and sportsmen for propagation purposes and birds turned loose in the covers of the state. From the distribution of eggs alone, it is estimated that more than 5,000 persons have been afforded experience in the breeding of ringnecks, and the recurrent applications for eggs from a large percentage of these shows that they constitute a valuable asset to the state in the maintenance of its supply of this valuable food-producing and sporting bird.

WITHSTANDS COLD WELL AND BUDS.—The result of these efforts has been the firm establishment of the ringneck in the wild throughout the greater portion of central and northern New York and on parts of Long Island, and the species has abundantly proved its ability to stand any degree of cold and to survive the heaviest snowfall, statements to the contrary notwithstanding. From the mass of available evidence confirmatory of this statement may be cited this instance:

John B. Burnham, president of the American Game Protective Association, states that there has been an excellent increase from the twelve ringnecks, six hens and six cocks, placed in the covers of Essex County in northern New York three years ago. It is estimated that the progeny of these birds at the present time numbers more than 100. Six distinct covies, each of good size, have been seen in one day within a small section of the

county. During one of the three years, a temperature of 33° below zero was registered.

Mr. Burnham states that he personally has seen ringnecks bud on apple trees during the winter and that other residents of the county have also observed them getting their food in this way. Ringnecks have also been observed in Essex County feeding on bitter-sweet vines in stressful weather. The country about Essex is wooded, showing that the bird will adapt itself readily to such surroundings.

PHEASANT VERSUS DOMESTIC FOWL.—As the main purpose of this manual is to encourage the general farmer and estate owner to take up pheasant breeding along with his poultry or substitute it is an activity that promises better profit than domestic fowl, the rewards it offers to the successful breeder should be examined. Pheasants mature rapidly and it costs less in feed and little more in care to produce fifty or one hundred birds than the same number of chickens, yet retail dealers pay for domestic-bred pheasants $3.50 to $4 a pair for eating purposes in the New York market during the season, which runs from October to May. Better than that, however, the pheasant farmer can count pretty surely on securing at least $5 a pair for birds sold for breeding purposes, and the demand for breeders frequently exceeds the supply.

DEMAND FOR BREEDERS.—Pheasants, however, are in principal request for breeding. Every fall and during February and March, there is a demand for birds for this purpose, and those who have attempted to secure them will testify to their scarcity. Spring-hatched birds were quoted at $5 a pair and hens at $3 apiece early this fall by the largest commercial breeder in the country and the price advanced fifty cents to $1 as the market was cleaned up. Two-year-old birds are preferred for breeding and bring a premium of at least $1 a pair. They are hard to obtain. Birds are wanted at the ratio of one cock to four or five hens usually for breeding purposes, though orders are not infrequently placed for cocks or hens alone, the former usually.

Every year sees additional sportsmen's clubs taking up the breeding of ringnecks for their covers and they, of course, have to obtain birds or eggs in order to make a start. Again, clubs and breeders generally who are already engaged in the business have to secure fresh stock yearly in order to preserve the stamina of their birds.

Some clubs buy birds in large quantities each year for shooting and two orders of this nature totaling 6,000 birds were filled this year.

REARING BIRDS FOR SPORTSMEN.—Farmers are sometimes employed by sportsmen's clubs to rear pheasants from eggs obtained

gratis from state game farms. One instance of this has been brought to my notice by Mr. W. S. French, Secretary of the Utica, New York, Fish and Game Protective Association. This organization has for the past two or three years contracted with a selected list of farmers in the neighborhood of Utica to rear a stipulated number of birds in the way indicated. It has been found that the farmers' wives take particular interest in this work and they doubtless use it as a pin money producer. The original rate of pay was $1 a bird but the club found it could not afford this and cut the price in half. This did not furnish enough incentive to the breeder. Mr. French expresses the opinion that seventy-five cents a bird would furnish the proper incentive and at the same time be within the means of the average sportsmen's organization. This is a branch of pheasant rearing that may contain the germ of large expansion in the future and its course will be watched with interest.

The Utica Association, Mr. French states, has placed about 500 eggs a year with farmers in the neighborhood, some of them undertaking the work gratuitously. From fifteen to seventeen eggs are placed under each hen and birds that survive till August 1 are paid for. While the association's contract calls for the delivery of birds to it, this is seldom done from the fact that the eggs are given out to farmers whose lands constitute especially good cover, and the birds in most instances are simply permitted gradually to establish themselves in this as they get old enough. This practice has resulted in making the farmer who rears birds solicitous for their protection. The work done by the Utica Association so far has been under absolute protection. It will be interesting to see how far its scheme will go toward providing sufficient sport when an open season is declared on the birds.

EGGS IN DEMAND.—Eggs of the pheasant for hatching purposes are in good demand during April and early May. At this time reliable dealers obtain approximately $3.50 to $4 a clutch of 15, and $25 a hundred. As the breeding season progresses, the price of eggs declines, of course. There are few breeders, indeed, who will part with early-laid eggs at any price, so that the man who depends on the purchase of eggs for breeding purposes is not likely to get the best quality. Mr. Duncan Dunn, superintendent of the New Jersey State Game Farm, states that in the course of a single year when he was head game keeper at Tranquillity Farms, the New Jersey estate of the late Rutherfurd Stuyvesant, he received inquiries for more than 30,000 eggs.

NEW YORK FORBIDS IMPORTATION OF BIRDS FOR FOOD. —A decided handicap to the breeding of all game birds exists in the fact that New York forbids the importation of hand-reared birds from other

states for purposes of consumption. Live stock for breeding purposes only may be brought in. This closes the New York market, the best in the country, to all breeders outside the state. While unrestricted importation of hand-reared birds would afford unscrupulous persons an opportunity to mask violations of the laws passed for the protection of game, it would seem that some modification might be made of existing laws and that, under carefully drawn regulations, permission might be given for the importation of birds, pheasants at least, that could be shown indubitably to have been hand-reared. Reluctance to act on this matter has arisen from fear that trapped wild birds might be brought into the state, placed on a game farm, and ultimately sold as preserve-bred game. This was actually done with mallard ducks a few years ago, but, notwithstanding this, it is thought by many that New York might be safely opened to pheasants under proper restrictions.

A recent liberalization of the New York law permits of the sale, under restrictions, of pheasants captive-bred within the state at any time. Details are given further on in the chapter on the marketing of pheasants.

From what has been written above, it would seem, that there is a good demand for pheasants and that the market is susceptible of great expansion. We shall now consider the pheasant himself.

CHAPTER II

The Ringneck—Its Evolution and Introduction into the United States—First Steps in Pheasant Breeding

The species of pheasant with whose breeding this manual has principally to do is variously called in this country "English pheasant," "English ringneck," "Chinese pheasant," "Mongolian pheasant" and simply "Ringneck." This bird, as it exists in the eastern portion of this country and almost wholly throughout the British Isles, is a cross between the "common" pheasant, *Phasianus colchicus*, which takes its name from the Colchis River in Asia Minor, and the "Chinese" pheasant, *Phasianus torquatus*, and its proper designation is simply "Chinese."

POSSIBLY INTRODUCED BY ROMANS.—The bird from Asia Minor is thought by some to have been introduced into England by the Romans, but Tegetmeier, the great English authority, thinks its acclimatization probably does not go back further than the Norman Conquest. The Chinese bird, according to the same authority, was introduced "long before 1790," though the exact date is not known. These birds are only sub-specifically distinct and freely interbreed, their progeny being perfectly fertile. In the British Isles it is said that cross breeding has progressed to such an extent that a pure-bred common pheasant is a rarity. The same may be said of the eastern part of the United States, but in the West pure-bred Chinese pheasants, descendants of the original stock sent to Oregon in 1880 and 1882 by the Honorable O. N. Denny, at that time United States Consul at Shanghai, and of frequent importations in recent years, constitute the major portion of the birds.

BROUGHT TO UNITED STATES MORE THAN A CENTURY AGO.—The first importation of pheasants into the United States of which there is any record took place more than a century ago. The importer was Richard Bache. The birds were brought from England and placed on Mr. Bache's New Jersey estate. The experiment was not successful and it may be said that the real introduction of the ringneck into the eastern part of the United States occurred in 1887 when the late Rutherfurd Stuyvesant brought over a lot of birds from England and placed them on his estate "Tranquillity" at Allamuchy, New Jersey. Donald MacVicar, former head game keeper for the Duke of Leinster, Kildare, Ireland, was given charge of these birds. Great discouragements were encountered but Mr. Stuyvesant was not to be daunted and MacVicar rose to the situation with splendid courage. After several attempts the birds were finally established.

MacVicar's work was taken up after his second year by Duncan Dunn and Adam Scott who, for twenty-three years, made the Stuyvesant and Rutherfurd estates, which adjoined, the nucleus of pheasant breeding in the United States.

So much for the history of the pheasant's introduction.

The first step in pheasant breeding is to procure a license. At least this applies in the more progressive game breeding states, all of which require the breeder of game to take such action. In New York it is provided (Section 372, page 109 of the Conservation Law) that the application for a license shall be addressed to the Conservation Commission at Albany, accompanied with a fee of $5. The license carries with it authority not only to breed but to sell birds whether alive or dead, but certain restrictions surround the latter case, which will be mentioned in the chapter on the marketing of pheasants. New Jersey charges $5 for a license also, but the Connecticut charge is only $2.

LOCATION.—The question of location comes next for consideration. Well drained soil of sufficient fertility to grow good cover crops is essential. In the wild state, pheasants frequent country characterized by both open fields and good cover. The fields they feed in must always be close to some place of safe retreat such as a thicket, woodland with heavy undergrowth or swale afford. They are particularly fond of the last named and will always resort to such a place some time during the day when it is available. Particularly do damp, semi-moist places appeal during the heat of a summer day. A well watered place is almost a necessity, though frequent streams through a farm usually mean that rearing fields filled with young birds may be flooded following unusually heavy rains. Some breeders prefer a farm with a single stream and pipe the water in whatever direction it is needed, running the pipes above ground. The winter pens at the New Jersey State Farm are supplied with running water which is sent through V-shaped troughs raised a foot or more from the ground. Good drainage, water and fair soil fertility are, then, the prime requisites in choosing a site for pheasant breeding. These matters will be discussed more in detail later.

SECURING BREEDING STOCK.—With the license obtained and the site selected, the next step is to secure the birds themselves or their equivalent in eggs. It is preferable to make a start with the birds, and they should be purchased in the fall or early winter, one cock to four or five hens. This will admit of their becoming thoroughly settled before the breeding season the following spring. Hens shipped in February or March are not as likely to lay well as birds shipped earlier.

START WITH BIRDS RATHER THAN EGGS.—That birds are to be preferred to eggs to make a start with is easily seen when one considers

Harry T. Rogers, Superintendent, New York State Game Farms. Left hand figure.

that ten hens, costing, with the two cocks necessary approximately $35 should lay at least 200 eggs during the season. If the same number of eggs were purchased in the spring they would cost about $50. The balance in favor of birds over eggs is thus $15. Then, too, the breeder will still have his birds, which will not deteriorate in value the first year and he will be out only the small sum expended for labor and feed during the winter months. In a good laying season ten hens are likely to produce more than 200 eggs, affording a surplus which may be sold and thus add to the profit of the breeder who starts his operations with birds.

There are many reliable dealers throughout the country, though breeding stock is generally scarce, so great is the demand. Wallace Evans, St. Charles, Illinois, John McCarthy, Dunnfield, Warren County, New Jersey, Morgan Wing, Sandanona Pheasantry, Millbrook, New York and John Heywood, Hubbardston, Massachusetts, are among the dealers who have established a reputation for good stock and fair dealing.

BIRDS OF WILD ANCESTRY PREFERRED.—Large breeders are always looking for fresh blood of good, sound stock to keep up the stamina of their flocks, and in this connection some of them are accustomed to get pure-bred Chinese birds.

Superintendent Rogers of the New York State Game Farms is a great admirer of the Chinese. Well recommended dealers in pure-bred Chinese are P. G. Bettendorf, Beaverton, Oregon and Mrs. G. H. Robbins, Hood River, Oregon.

TWO-YEAR-OLDS PREFERRED AS BREEDERS.—While two-year-old birds are generally preferred as breeders, they are hard to obtain.

Mr. Rogers states that his three-year-old birds outlay the one- and two-year-olds approximately ten eggs to the season year after year. It is well to remember, also, that birds distributed gratis by the states are not to be confined and hence cannot be used for breeding for private profit. The amount of breeding stock ordered will depend, of course, upon the number of birds the breeder wishes to raise. It is probably conservative to estimate that it is possible to rear to maturity 12 birds to each breeding hen, where only a few breeders are kept and there is ample range. This is based on an estimate of twenty eggs laid by each hen and the bringing to maturity of chicks from a few more than half of that number. On this basis, if one wished to rear 120 pheasants a year, for instance, he would order ten hens and two cocks.

PEN FOR BREEDERS.—The order for the birds given, in fact, prior to its placing, a pen for their confinement should be provided. This may be of several types. The most important detail to be considered is that a space of not less than 75 square feet should be available for each bird, if the pen be of the stationary type. Where birds are reared in large numbers, 100 or more feet is preferable. As stationary pens should be spaded and limed yearly, it is preferable that they be provided in duplicate. Three types of pens are commonly used for confining adult birds.

THE MOVABLE PEN.—On the New York State Game Farms a movable pen is employed, and this is probably the best type for the small breeder. It is 12 x 14 x 6 feet, covered on the sides and top with 2-inch poultry netting and is built on runners. It gives nearly 40 square feet to each of the five birds confined in it. Figure 1-A shows a detailed plan for the construction of this and Figure 1 shows the completed pen and one of the methods of moving it. The lumber required for the pen as given by Mr. Rogers is as follows:

White pine or spruce—2 boards 7/8 in. x 12 in. x 16 ft.
White pine or spruce—3 boards 7/8 in. x 12 in. x 12 ft.
Hemlock —2 boards 2 in. x 4 in. x 14 ft.
Hemlock —2 boards 2 in. x 4 in. x 12 ft.
Hemlock —7 boards 2 in. x 4 in. x 6 ft.
Hemlock —1 board 2 in. x 4 in. x 16 ft.

(Item immediately above is for braces which go across corner of pen. The timber should be cut into 4 pieces of equal length.)

White pine or spruce—3 boards 7/8 in. x 4 in. x 14 ft.
White pine or spruce—6 boards 7/8 in. x 4 in. x 12 ft.

Mr. Rogers states that it cost approximately $5 to build this pen several years ago, but, as the price of poultry wire has increased since then, the expenditure required today would be greater. It would be a

good idea to place a three-foot strip of burlap about the bottom of these pens to reduce the disturbance of the inmates to the minimum. A horse is employed for drawing the pens long distances, but for shorter hauls two men, armed with grappling hooks, which are inserted under the lower edge of the forward end of the pen, are sufficient.

FIGURE 1.—Movable type of pen for adult ringnecks employed on New York State Game Farm. (Figure 1-A gives detailed plan for construction of this Pen).

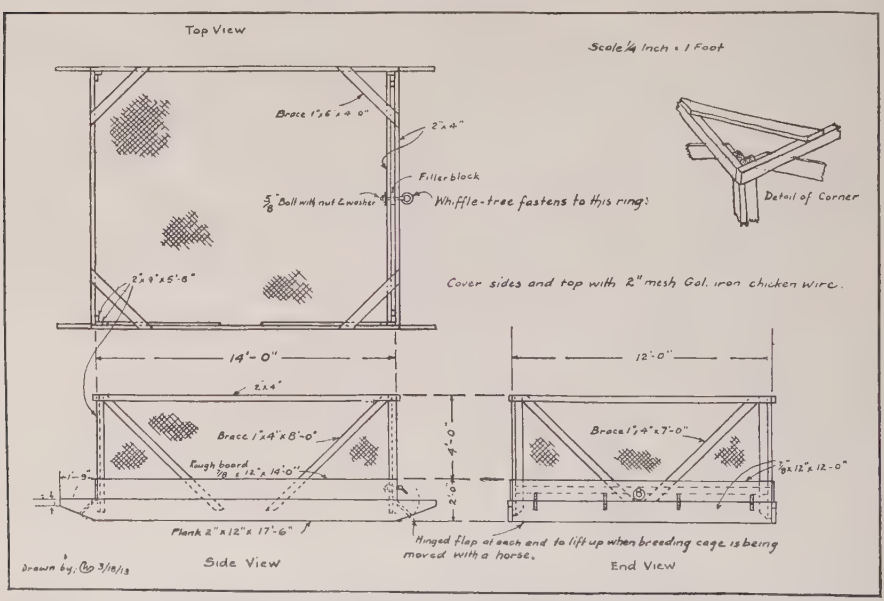

FIGURE 1-A.—Detailed Plan for construction of movable pen for adult ringnecks. (Figure 1 shows completed pen.)

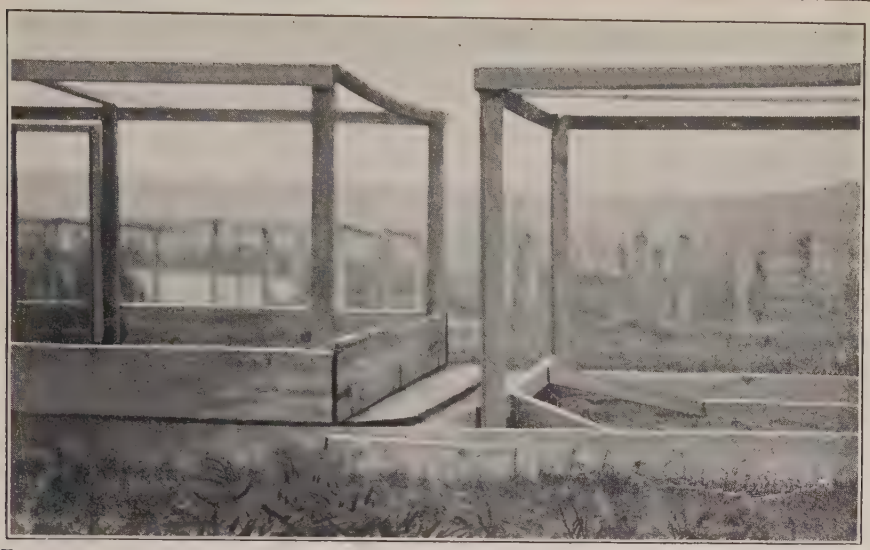

FIGURE 2.—This shows how the movable pens for adult ringnecks are made intercommunicating by raising the hinged flap at the end.

At the New York Farms these pens are placed end to end, made intercommunicating by means of the hinged flap noted in the drawing, and used for confining the birds during the winter. Mr. Rogers states that he has found .19 gauge wire better than heavier material. Wire galvanized after weaving is much more durable. On some farms the wire is dipped in hot tar as a preservative.

In moving these pens, one is boarded over the bottom and the birds are driven in it and confined till the move is completed. Fish netting is substituted for wire on the pen thus employed to keep the birds from injuring themselves. Figure 2 shows how the pens are made intercommunicating.

WIRE VERSUS FISH NETTING.—The European war has caused a heavy increase on the cost of wire netting used in enclosing and covering pens, and prices are subject to frequent and rapid fluctuations. At this writing, early November, 1915, the New Jersey Wire Cloth Company, 219 Fulton Street, New York City, quotes as follows the meshes principally employed in game farming:

Mesh	Width	Length	Gauge	Price
2-inch	6 ft.	150 ft.	19	$5.62½
1½-inch	6 ft.	150 ft.	19	7.87½
1-inch	6 ft.	150 ft.	19	14.62½

Wire cloth, used principally in quail breeding, is quoted 5 cents a square foot net, for both the ⅜ths and ½-inch meshes. The mesh in the

netting which is commonly referred to as "poultry netting" is hexagonal and in the cloth square.

Too much emphasis cannot be placed on the necessity of having the wire covering the pens stretched loosely. This greatly minimizes the chances of the birds injuring themselves in the very probable event that they will fly against it if seriously alarmed. Such a mishap usually results in scalped heads and badly injured wings. Clipping one wing also tends to reduce this danger.

Occasionally breeders use fish net as a substitute for wire netting, particularly for pen coverings, as it lessens the chances of injury if the birds fly against it when alarmed. It is much more expensive than wire and does not wear as long, but is more easily handled. W. A. Augur, 33 Fulton Street, New York City, furnished the following quotations on October 5, subject to change at any time:

Two-inch square mesh, 20-thread, soft laid twine, 1½ cents a square foot.

One and one-quarter-inch mesh, 24-thread, medium laid twine, 2¼ cents a square foot.

Tarring is advisable, and this adds approximately 5 per cent. to the cost.

In order to afford a comparison between the cost of wire and fish net, it may be mentioned that a 150-foot bale of the former, 6 feet wide and 2-inch mesh, would cost at this time $5.62½, while a similar quantity of fish net of the same mesh would necessitate an outlay of $13.50.

STATIONARY TYPE.—The second type of pen for confining adult birds is that employed on the New Jersey State Game Farm, see Figure 3. It is 300 x 150 feet and 7 feet high. Two pens, each of this size, immediately adjoining, are built, one covered and one open at the top. The birds are allowed to range in the open top pen in the daytime but are confined in the closed top enclosure at night for greater security. A maximum of four hundred and twenty breeders is placed in these twin pens. The sides are composed of solid boards for a distance of 3 feet from the ground, the remaining space being covered with wire poultry netting. The boards, 4 feet long, 12 inches wide and ⅞ inch thick, are sunk one foot in the ground to prevent vermin from getting under the fence. They are nailed vertically top and bottom to pieces of 2 x 3. (In country that is badly infested with vermin, ½-inch wire netting should replace the boards. It is run one foot vertically beneath the surface and then bent outward at right angles and run six inches horizontally.) Above the boards, which minimize the alarming of the birds by dogs and passersby, one-inch wire poultry netting is employed. Two-inch mesh wire, stretched loosely to

FIGURE 3.—Stationary type of pen for adult ringnecks employed on New Jersey State Game Farm. Malcolm Dunn feeding his birds.

FIGURE 3-A.—Corner of New Jersey type stationary pen, showing employment of boards in constructing sides to prevent alarming of birds.

FIGURE 3-D.—Combined shelter and catching coop placed in one corner of New Jersey Stationary Pen.

FIGURE 3-C.—Showing method of overlapping tapering ends of white cedar beams. To afford greatest protection from the weight of snow these should be lashed with wire.

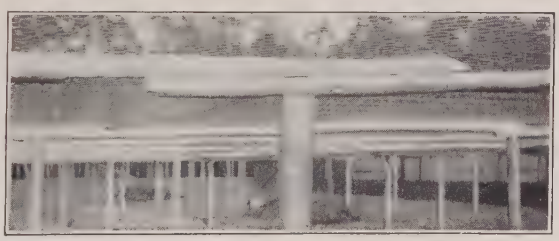

FIGURE 3-B.—This shows how large ends of white cedar beams are overlapped in constructing covering of New Jersey Stationary Pen. Counter braces of 2 x 6 are also shown.

lessen snow damage, covers the pen, and it is supported by five-inch white cedar beams, 16 feet long, resting on six-inch posts, which are 10 feet long and placed 14 feet apart. The beams (Figures 3-B and 3-C) overlap some 3 or 4 feet, are shaped with an adze so as to interlock and, further, are lashed with wire to prevent the weight of heavy snows from pulling them down. Braces of 2 x 6 stuff are nailed to every third row of the posts supporting the roof at right angles to the white cedar beams. See Figure 3-B. Posts supporting the beams are set with 3 feet of their length under ground. Posts used in constructing the side of the pen are placed 7 feet apart.

In one corner of the pen is placed a coop for shelter and as an aid in catching up birds. It is pictured in Figure 3-D. The dimensions are: height, front, 6 feet; rear, 3 feet; 16 feet long x 7½ feet wide. A three-foot door gives admission. Roosts of poles placed 2 or 3 feet from the ground are provided both in the coop and outside in the pen and, in addition, evergreens are arranged around some of the posts which support the top of the pen and in the corners, to provide cover. Evergreens are also placed on either side of some of the pen roosts, forming excellent protection from the weather.

THE HURDLE PEN.—A convenient type of pen for the small breeder is constructed by the use of wired-frame units known as "hurdles." See sketch, Figure 4. These are employed more in England than in this country, but they constitute a cheap form of construction, are adapted to almost any situation, and pens constructed of them are easily moved. A frame 6 x 6 feet is constructed of 2 x 3 stuff and covered with 1-inch poultry netting. Over this at the bottom is nailed burlap or roofing paper 3 feet wide, which serves to prevent the disturbing of the birds by dogs and passersby. The top edge of the burlap is nailed to a piece of 2 x 3 which

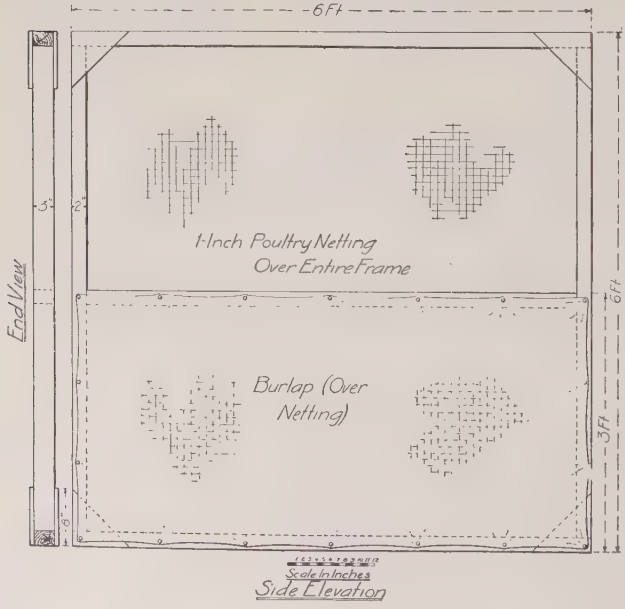

FIGURE 4.—Sketch of hurdle employed in constructing pen for adult ringnecks.

bisects the frame and serves also as a brace. The four corners of the frame are braced with solid, triangular pieces of wood or gussets. If it is desired to have the frame underground as a protection from vermin, it can be made 7 feet high, the extra foot being buried. The frames are lashed to stakes driven in the ground and they permit of the construction of a pen or pens of practically any size and shape. The pen constructed with them should be covered with 2-inch mesh poultry wire or fish netting, preferably the latter, which is much more easily handled in moving the pen and which requires no bracing across the middle as the wire netting does. Adult birds confined in pens of this type should be given a minimum of 40 square feet a bird and the pen should be moved monthly, particularly if the ground has been used the previous season for penning birds. The hurdle is not recommended where birds are reared in numbers, but it has the recommendation of economy and mobility when employed with a few breeders.

REQUISITES FOR PENS FOR ADULT BIRDS.—Summing up, pens for adult birds of whatever type should contain: cover for hiding and laying; roosts 2 or 3 feet from the ground which should be removed in laying season, as some birds will drop eggs from them which will cause egg-eating in the pen; a simple shelter open in front with back to prevailing winds, which will keep rain from the dust baths which are absolutely necessary, (in movable pens this consists of an overhung board attached to the end and slightly sloping); doors with lower edges 10 or 12 inches above ground to prevent ingress by dogs or vermin.

On large operations a separate pen is prepared in March for the breeders as explained in page 45, but the small operator can use his winter pen for breeding.

ELABORATE PEN NOT NECESSARY.—Finally, any sort of stationary pen will answer the purpose of the small breeder if it affords a minimum space of 75 square feet to each bird, and the soil be kept fresh from year to year by spading, liming and the sowing of rye, clover or other purifying crops, though, even with this precaution, the location should be changed from time to time.

LOCATING THE PEN.—A pen is best located when placed on well drained, sloping soil, the south side of a hill being preferred. In small breeding operations it is well to have it located as near to the house as possible, as this reduces the danger from marauders of all kinds.

Pheasants need grit (sharp-surfaced mica); and charcoal must always be on hand. A good supply of pure water is absolutely necessary. It is important to bear in mind that the pheasant can stand a great deal more cold than domestic fowl and consequently needs, and will thrive better with, much less shelter; a few evergreens being really all that is absolutely necessary.

CHAPTER III

Preparing for the Breeding Season

We will suppose that the breeding stock, 10 hens and 2 cocks, has arrived and that the pen is ready to receive them. They should be shipped with the primaries, the long feathers of one wing, clipped and if the person ordering has neglected to specify this in giving his order, he should attend to it before releasing the birds. For the beginner it is better that two attend to this operation. Firmly secure both feet and wings, holding the latter against the bird's body, before drawing the creature from the crate. Hold the bird with his head toward you. Have your assistant ready with the scissors. He should grasp the wing to be clipped firmly near the base as you release it. Only the five or six longest feathers need be clipped and care should be taken not to cut them off too closely. Do not in any circumstances *squeeze* your bird. The clipping keeps birds from injuring themselves by flying against the sides and top of the pen and makes capture easier in the event any escape. Birds renew their flight feathers after the summer moult and they are wing-clipped in March and September if kept in open pens. Pinioning, cutting off the last joint of one wing and thus removing permanently the ten primary wing feathers, is sometimes practiced, but rarely by experienced breeders, who pretty generally decry it, as it renders the bird practically defenseless for the rest of its life.

RELEASING SHIPPED BIRDS.—It is good practice to release birds as soon as possible after they are received, daylight being preferred. Having first provided scratch food, (mixed grain obtainable at any poultry supply house) charcoal, grit, water, dusting facilities and cover of evergreens or brush, place the shipping crate within the pen and provide an opening barely sufficient for the exit of the birds. Then, retire and keep away from the pen as much as possible, allowing your birds to accustom themselves to their new surroundings.

The best practice is to keep cocks and hens separate until the laying season arrives, and this is essential where large numbers of birds are being reared.

WINTER FEEDING.—Bed your pen fairly deeply with leaves or straw in one corner. Feed wheat, corn or any regular scratch food grain mixture. R. D. Eaton, Norwich, New York, sells a scratch food of good quality at prices considerably lower than those asked by most city dealers. His brand is called "Climax." The greater variety of feed employed the better. Throw feed on straw and leaves, thus making the birds work for it. Two light grain feeds a day, morning and night are sufficient, many

breeders feed only once, in the late afternoon. Mangels or beets of any sort, turnips, lettuce and other succulent foods should be given. It is well to hang such food to a string slightly out of reach of the birds as they stand and thus make them work for it by jumping. Of course, you will keep grit and charcoal constantly before your birds. They seem to prefer it simply mixed with the grain feed or thrown on the ground separately and do not take to it as well if supplied in hoppers.

Be sure that some sort of hiding place is afforded your birds. It will greatly minimize their chances of getting hurt by flying against the sides of the pen. A pole 4 or 5 feet long supported at either end by stakes 2 or 3 feet high and covered with small evergreens, furnishes a splendid bit of pen cover and also affords a good laying place.

PREPARATION OF REARING FIELD.—If birds are to be reared on a large scale, the rearing field should be sown with grass and clover the preceding fall or spring. This will be gone into when the subject of rearing fields is considered. When only a few birds are involved, however, this does not have to be considered. One piece of fall or winter work for small and large breeders alike, however, is the construction of coops, runs, frames and other paraphernalia to be used during the forthcoming breeding season. These will be discussed in detail later. Still another bit of winter work is the preserving of hens' eggs in water glass to provide food for the pheasant chicks, if the supply the farm will afford in the spring, when eggs are cheap, will not be sufficient for the purpose. The receipt of the United States Department of Agriculture for preserving eggs (Farmers' Bulletin 128) calls for the dissolving of 1 part of syrup-thick water glass in 10 parts by measure of pure, boiled water after it has cooled. Scald the vessel in which the eggs are packed and then pour the solution over them. Use only clean, uncracked eggs and do not wash them. Earthenware receptacles are preferred for the eggs.

View of pens for adult birds on New York State Game Farm at Sherburne.

If only a few birds are to be reared, it is seldom necessary to preserve eggs for their feeding.

COCKS PLACED WITH HENS IN MARCH.—The arrival of the breeding season is the next important event for the beginner. Cocks should be placed with the hens the latter part of March. When only a few breeders are employed or where small pens are used, it is probably best to keep each cock and the hens allotted to him in a separate pen, but where breeding is done on a large scale the entire breeding stock is frequently confined in one pen. On the New York State Farms, breeders are kept in the small movable pens heretofore referred to, but the pens are no longer intercommunicating, one cock and 5 hens being allotted to each, while on the New Jersey Farm, all breeding stock is confined in one or two large pens. It is claimed that more eggs are produced under the former method, but those who employ the latter point to the fact that a good deal more time is necessary both to gather eggs and to attend to the birds where the former is employed.

FIRST EGGS IN APRIL.—In New Jersey the first eggs are laid usually during the first week in April; in Central New York, during the third week of that month and in Illinois during the last week in March. Some two or three weeks before the laying season begins, it is customary to start a special course of feeding designed to stimulate production and increase fertility. The ration employed by Superintendent Rogers of the New York State Game Farms for that purpose follows:

ROGERS LAYING MASH.—Equal parts of corn and oats ground together (commonly known as "cowfeed") and middlings, to which mixture add one-fourth bran, one-fourth mealed alfalfa and one-tenth bone meal. Scald the alfalfa over night and use sweet-smelling bone meal only. Before adding the alfalfa scald the mixture above given and, when cool, work in the alfalfa. This mixture, which is equally good for ducks, should be fed crumbly, never sloppy. If it is too wet add sufficient middlings to make it crumbly. Feed this mash food every morning and give the usual grain feed at night. Keep grit, charcoal and oyster shell always before birds.

DUNN SYSTEM OF FEEDING LAYERS.—Mr. Duncan Dunn has his pens at the New Jersey State Game Farm in nice clover when the birds are turned in at the commencement of the breeding season. He feeds his laying hens scalded pheasant manna (a mixed grain ration prepared by Spratt's) in the morning and wheat (dry) at night. Onions and onion tops are added to the manna from time to time. They are ground in a meat chopper. Mr. Dunn also feeds onions to his young birds. He states that the onion odor permeates their bodies and has a perceptible effect in keeping lice down.

Of course, the feeding of a special laying ration will greatly stimulate production, but the small breeder should understand that this is not absolutely necessary, though its omission will undoubtedly cut down profits. When breeding is done on a large scale, the ration is essential. At all events, give plenty of green food, lettuce being excellent. In feeding lettuce it is well to let it go to seed before placing it in the pen.

EGGS AND EGG EATING.—Eggs should be gathered twice daily. This greatly stimulates egg production and tends to prevent egg eating. Nests do not have to be provided. Most of the eggs will be laid under the evergreens provided for cover, but birds will drop eggs at times anywhere about the pen. Egg eating is a not uncommon vice among pheasants, the cocks being principally addicted to it. Bone meal supplied with the laying ration will tend to obviate this. Frequent gathering of eggs is the best safeguard. Imitation glass eggs made to look as much like the real egg as possible will help break cocks of the habit. Poultry dealers carry a glass egg designed for bantams which may be used for this purpose, though it is not a very good imitation and lacks weight. Tegetmeier, (p. 103, fifth edition) commends the eggs made by Mr. Fairfax Muckley, Audnam, Stourbridge, England. Iron eggs painted as near the color of pheasant eggs as possible are good. Imitation eggs are supplied by Spratt's, Limited, Newark, New Jersey, at five cents each. Some breeders pen the egg-eating cocks each day until the hens have laid, but this involves entirely too much trouble. The upper mandible of the bird may be pared with a sharp knife so that when it strikes the egg, it will cause pain. This is said to be effective.

CARING FOR EGGS.—Eggs when gathered should be placed in a cool, well ventilated place of even temperature and care should be taken that the sun does not have access to them. A semi-dark room is excellent for this purpose. Lippincott says (Poultry Production, p. 157) temperature limits of 55° and 65° F. give best results. Place the egg with the small end down in a tray filled with oats or oat husks and turn twice daily. By placing all eggs in the same position at the beginning, it is easy to ascertain whether they have been turned. Another method is to bore several rows of holes in a ⅞-inch board with a brace and bit and place the eggs on this. On many large farms the egg turner manufactured by the Houghton Egg Carrier Company of 13 Burlington Street, Woburn, Mass., is used successfully. This is made in several sizes and permits the turning of hundreds of eggs within two or three seconds. The smallest size holds fifteen dozen eggs and sells for $3.25 while the largest has a capacity of 84 dozen and is priced at $8.50. There are two sizes in between. The larger poultry supply houses carry this article. Do not place unwrapped

eggs in bran or any stuff that will clog the pores of the shell, and do not permit them to come in contact with each other through the jolts of shipping. Excellent containers for shipping eggs are sold by Messrs. Stumpp & Walter, 30 Barclay Street, New York City. One of these, known as the "Eyrie," is made of corrugated board, in 15 and 30-egg sizes and sells for fifteen and twenty-five cents respectively. The other container, designed for larger and longer shipments, is made of ⅜-inch pine and comes in 15, 30, 60 and 100-egg sizes, selling at 20, 25, 40 and 50 cents, respectively. Considerable reductions in price are made on both kinds of containers for quantity orders.

In using any container, each egg should first be wrapped securely in paper, then the carton should be half-filled with bran or oats. The wrapped eggs are next placed in the individual compartments provided for them and they are then covered with bran or oats as the case may be. A grape basket with shavings used for packing answers every purpose. Wrap each egg and be sure not to substitute anything for shavings in packing.

AGE LIMIT OF EGGS FOR INCUBATION.—On most farms, the endeavor is to avoid using eggs for incubation that are more than ten days old, but opinions differ largely on this subject, and so excellent an authority as Mr. Rogers thinks an egg three weeks old properly cared for is as fertile as one newly laid. Experiments with domestic fowl, however, show that the percentage of eggs not hatching shows a fairly consistent increase for all periods longer than two weeks, and it would seem reasonable to infer that the same holds true for all gallinaceous species, at any rate. Mr. Dunn advises that, if eggs more than ten days old are used, they should not be mixed with those that come within that limit. It is probably wise not to use any eggs that are more than three weeks old nor those laid during the first five days after the cocks are placed with the hens.

Assuming that our beginner will secure at least 300 eggs from his ten hens, he should start incubating operations as soon as the first 100 eggs are laid. Generally speaking, the birds earliest hatched thrive best and the larger the number of eggs started at any one time, the less will be the labor of attending to the chicks.

Mr. Rogers conducted an experiment with 800 late laid eggs at the Sherburne Farm during the past summer, starting his hatch well into July. His report was, "Results just as good as during any part of the rearing season. Birds strong and healthy."

CHAPTER IV

Preparing for the Hatch—Nest Boxes and Nesting Coops

Pheasant hens in captivity are practically non-sitters and so domestic hens are employed as foster mothers. There is considerable difference of opinion as to the best type of hen to be employed in this connection.

THE BANTAM AS FOSTER MOTHER.—There is a widespread idea that the bantam breeds afford the ideal mother for ringnecks and from time to time articles appear in sports publications gravely discussing this matter. Medium to light weight hens of the ordinary breeds, however, are to be preferred, and as they can cover more eggs and naturally are able to generate more body heat for purposes of incubation, it seems reasonable to suppose that the consideration of bantams is more or less time wasted. The latter are not employed on any large farms so far as my knowledge goes. If any reader feels that he wants to try the bantams despite what has been said, it may be stated that the silkie and buff-cochin (bantam, of course) both make excellent mothers, but the feathers on their legs harbor vermin, a considerable disadvantage. Mr. Duncan Dunn states that a cross of the silkie and fighting (not bantam) game, produces a clean-legged fowl of excellent qualities as a mother.

TYPE OF HEN EMPLOYED.—Heavy hens are usually avoided, as well as long-legged individuals. The very best hen of all, perhaps, is the bird of large frame, heavily feathered, but of medium weight. Rhode Island Reds of medium to light weight, late hatched birds, usually make excellent mothers. Mr. Harry T. Rogers employs most successfully large numbers of two- and three-year-old white Leghorns, usually regarded as non-sitters and entirely too nervous to make good mothers, but this practice is not recommended to the inexperienced. Mr. Rogers' experience has been that many birds are killed on the nest by Plymouth Rocks. Hens proving to be good mothers should be kept from year to year, as they are a valuable asset indeed.

INCUBATORS TO BE AVOIDED.—Incubators are not recommended, though a small one will serve to take care of a clutch of eggs if a setting hen is broken up till another can be provided. Pheasant chicks will not hover in brooders, so that a hen mother has to be provided for those hatched by incubator and, in addition, such stock has not the stamina of birds incubated by natural methods.

FIFTEEN EGGS TO HEN.—While experienced breeders place 19 to 21 eggs under each hen, it is best that the beginner use only 15. One

FIGURE 5.—Incubating coops employed on New York State Game Farms shown in actual use. From 500 to 1,000 eggs are usually put under hens at one time, 20 eggs to each hen.

hundred eggs, 105 to be exact, will require 7 setting hens. If our beginner has that number, he will be fortunate and it is, of course, good practice to encourage all hens that become broody to continue in that state while the first batch of pheasant eggs is accumulating by placing a few eggs of domestic fowl under them, so that they will be ready when the time comes to place the pheasant eggs under them.

POINTS ABOUT SETTING HENS.—It is not unlikely, however, that the breeder will have to call on his neighbors to help out with setting hens. These rules are to be observed if such is the case:

1. Always procure your hens at night.

2. Never tie their legs, but confine them in a box or loosely-woven sack, one sack to each hen being best.

3. Have your nests prepared, placing a few eggs of domestic hens in each, prior to going forth on the hunt for setting hens and place the hens thereon as soon as you return, dusting them four or five days after they have been placed on the nest thoroughly with pyrethrum, sometimes called Persian powder. (Dusting will be explained in detail a little later.)

4. Never employ a hen with feathers on her legs nor one afflicted with scaly leg. The former harbor vermin and the latter will communicate the disease to the pheasant chicks. Detailed information regarding scaly leg is contained in the chapter on Disease and Its Prevention.

5. Try out your hens for two or three days before placing pheasant eggs under them.

The price paid for setting hens runs from 75 cents to $1. When rented they bring usually 50 cents. Purchased hens can generally be resold in the fall for 75 cents.

TYPES OF INCUBATING COOP.—The hens procured, it is necessary at this point to consider what sort of coop or box for nesting purposes should be employed. The two types most generally used are illustrated in Figures 5, 5-A, 5-B and 6. Their description follows:

Figure 5: This is the type employed on the New York State Game Farm and it is probably better adapted to the beginner and the small breeder than any other. It is also most successfully employed in operations conducted on a large scale. In this type the nesting box and the coop in which the young pheasants resulting from the hatch are reared are combined. The coop is 2 feet square, 19½ inches high in front, sloping to 12 inches at the rear. The top is removable, the front slatted and provided also with a board 1 x 2 feet, which serves as a door and, later, in the rearing field, to shade the enamelware pan in which water for the young birds is placed.

LUMBER FOR ROGERS' COOP.—The lumber this coop calls for is:

White pine or spruce—1 board ⅞ in. x 12 in. x 10 ft.
White pine or spruce—1 board ⅞ in. x 10 in. x 8 ft.
(tongue and groove)

The actual cut of the lumber for the coop follows:

2 Bottom boards, rear and 2 sides 1 x 2 ft.

2 Top boards which complete the enclosure of the 2 sides. They are triangular in shape, measuring 9½ in. in front x 25½ in. on top x 24 in. along the bottom. These boards support the roof and their cut gives it a decided slant.

1 Top board, front, 10 in. x 2 ft. This has a 1-inch hole bored in the center affording entrance for the point of the bellows used in treating birds affected with gapes. (See chapter on Disease and Its Prevention.) A button is attached to the center of this board along its lower edge to secure the door, which is placed immediately below it.

4 Slats, 3 x 16 inches, placed equidistant across the front of the coop. The slat farthest removed from the nest is nailed loosely, so that it may be pulled aside and afford ingress to the hens when they have finished feeding.

1 Brace, 3½ inches x 2 feet, nailed across the bottom of front of coop. The lower ends of the slats are nailed to this.

1 Door, 1 x 2 feet. This has a cleat attached at the center to facilitate handling. The door is not attached to the coop in any way but is

kept in place when the hens are on the nest by a button placed on the lower edge of the top board immediately above it, as previously described.

3 Roof boards 10 x 32 in.

2 Cleats 3 x 22 in. nailed to under side of roof boards.

These cleats should be nailed so as to give the roof a 6-inch rear overhang, affording very necessary shelter for birds caught outside the coop in heavy rains. The roof affords excellent ventilation if placed so that the front cleat rests on the edge of the top board at the front of the coop and it should always be so placed.

FRAMES TO ENCLOSE NEST.—The above completes the coop proper. As this coop is used both for incubating and rearing, it would be too large for the former purpose but for the utilization of a clever device for confining the nest to proper proportions. This is done by the construction of a simple board frame (see Figure 5-B) 16 inches square, which is placed in the corner of the coop farthest removed from the movable slat mentioned above. This is done so that the setting hen, in returning to her nest, will not be afforded the opportunity of stepping upon it as she enters the coop. Broken eggs are reduced to a minimum by this device. The construction of the nesting frame calls for 4 pieces of ⅞-inch board, 3 inches wide and 16 inches long. A second frame of the same dimensions is placed upon the first when pipping commences to prevent the chicks first hatched from escaping from the nest and perishing of cold. This is shown also in Figure 5-B, resting against the side of the coop.

A nail should be driven two-thirds of its length in the front edge of one of the boards constituting the side of the coop, 6 inches from the ground, and on this should be hung a tin cup, which should be kept supplied with fresh water. Make the hole in the side of the cup large enough to slip easily on and off the nail. This method of supplying water keeps

FIGURE 5-A.—Front view of incubating coops shown in Figure 5. Note door resting against coop and hole at center near top for blowing in powder with bellows when treating young birds for gapes.

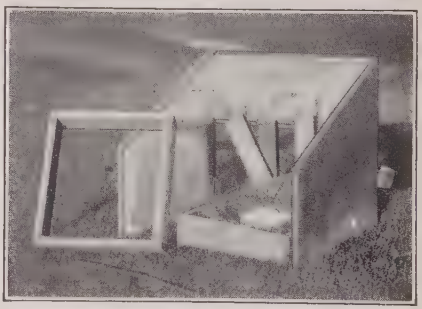

FIGURE 5-B.—Interior of incubating coop (Fig. 5) rear view back and top removed. Note nest frame and extra frame to prevent early hatched chick's escape, also slat pulled aside to allow hen to feed.

it from being fouled and places it beyond the reach of young pheasants when the coop is removed to the rearing field. The cost of the material used in constructing this coop is about 75 cents, Mr. Rogers states.

THE WIRE RUN.—We come now to the wire run placed in front of each coop of the Rogers type to confine the setting hen when she is taken off each morning to feed. See Figure 5. This is 3 feet long, 2 feet wide and 21 inches high, with removable top. It is covered on the front and two sides with ½-inch poultry wire, the rear being open and placed against the front of the coop. The top is covered with ½-inch wire also and the employment of this mesh keeps the sparrows out.

FIGURE 6.—Showing method of incubation employed on New Jersey State Game Farm. The man is Superintendent Duncan Dunn.

Figure 6: This is the type of nesting box employed on the New Jersey State Game Farm. It consists of several rows of boxes placed one on top of the other much as the lock boxes in post-offices are arranged. Each row is 8 feet long, 15 inches wide and 18 inches high and contains 6 nesting compartments, 15 x 15 inches. Only the lowest row is provided with a bottom, the top of each preceding row serving as the bottom of the one above it. In each of these compartments a sod is placed, grass side up, but it is first hollowed out a little on the under side so as to afford a saucer-shaped contour for the nest and the depression thus formed is lined with soft grass or hay. When this type of nest is used, the hens are taken out daily and placed in slatted coops with trough in front for feeding.

SUBSTITUTE FOR SOD.—In country having a heavy clay soil, the sod does not work so well and Mr. Adam Scott, manager of the Froh-Heim Game and Poultry Yards at Far Hills, New Jersey, states that he has employed with good success as a substitute O. K. litter, which is sold by Messrs. Stumpp & Walter of 30 Barclay Street, New York City, at $2.50 a bale. It is claimed that this is vermin-proof. The litter is worked over two or three days with a shovel and then soaked in hot water. When placed in the nest it is moistened by sprinkling.

Figures 6-A and 6-B show the excellent rearing coop used on the New Jersey Farm. While it has no part in hatching, the coop described a

FIGURE 6-A.—Coop employed on New Jersey farm for rearing young ring-necks. Note board run which is usually discarded when chicks learn foster-mother's call after four or five days.

FIGURE 6-B.—Another view of New Jersey rearing coop showing employment of shutter to give shade and ward off rain. A similar shutter is used to afford a floor for the coop during the first few days of the chicks' existence.

few paragraphs above (the New York coop, Figure 5) is used both for hatching and rearing; hence it seems proper at this point to give a description of the New Jersey coop, which is 22½ inches wide, 27½ inches long, 22 inches high in front, sloping to 10½ inches at the rear. The roof is 26 inches wide and 40 inches long and is stationary. There is a hinged door on one side 8 x 8½ inches. In front are three stationary slats 10½ inches long and 2½ inches wide. Back of them four movable slats, 13 x 2½ inches are made to slide so that the coop may be opened or closed in a moment. Above the slats is an opening 17 inches long and 5½ inches wide, which is covered with ½-inch wire cloth or fly screen. It aids in ventilation when the slatted front is closed. On either side 8 one-half-inch holes are bored 2½ inches from the top as a further aid to ventilation. With each coop are provided two boards called "shutters" each 23 inches wide and 28 inches long. One of these furnishes a floor for the coop when the young chicks are placed in it, being removed after the first few days unless the weather is unusually rainy, and the other is used to shade the front of the coop and prevent rain from blowing in.

CHAPTER V

From the Commencement of Incubation to Pipping

Spray the incubating coop or box, as the case may be, thoroughly with any good coal tar dip, procurable at poultry dealers. On large farms the coops are dipped in a tank of disinfectant, (Kreso dip Number 1, Parke & Davis, being used on one farm at the ratio of one gallon to 150 coops). Place the coop (New York type), on a well-drained piece of ground which will afford exposure to both sun and shade. An orchard is usually a good location. If a flat, treeless field is the only spot available, the front should be placed so that it will be away from the sun the greater part of the day, unless the weather is still cold. Bear in mind that fowl prefer morning to afternoon sun. Be sure that the coop is so placed that water will not drain into it. A little banking of earth around it will usually prevent this. The coop located, the door should be put in place and the roof arranged, as previously explained, so as to afford ventilation. The wire run is next placed in front of the coop. Nesting boxes (Figure 6 of preceding chapter) are placed indoors and should be located so as to protect the setting hens from draughts. The room containing them is usually kept in semi-darkness.

BUILDING THE NEST.—The next step is the building of the nest. This has already been covered in the description of Figure 6, but requires special explanation for Figure 5 (New York type).

The first step is a slight hollowing of the earth by pounding. This done, place the nesting frame about the space so treated, being sure that the spot selected for the nest is farthest removed from the loose slat. Next place fairly coarse straw within the frame, thus forming the base of the nest. Shape this slightly and line it with soft hay or grass. The nest should have a very slight incline toward the center. Eggs piled on top of one another when the hen is taken off usually mean too deep a nest, in which case it should be remade. A nest nearly flat makes easier for the embryo chick its exit from the shell. It will be noted that this type of nest is not in as close contact with the earth as that pictured in Figure 6. Mr. Rogers, who employs it, thinks too close contact has a tendency to cause diarrhoea in the setting hen. Eggs of any type of nest should be sprinkled with tepid water in very dry weather and, where they are placed on the ground, the earth immediately surrounding the nest may also be moistened.

SELECTING EGGS FOR INCUBATION.—We will suppose that our breeders' setting hens have been tried out on other eggs two or three days, that they have been dusted, and that now the real business of

commencing the hatch is about to begin. In selecting eggs for incubation, avoid all but those strictly normal, such as thin-shelled, "flat-sided," elongated, covered with lime deposit, ridged and fouled; also eggs below the average size. Experiments with poultry seem to indicate that three or four days are required for the full establishment of the fertility of eggs after the first mating, so it is probably well to avoid those laid within this period.

Put fifteen eggs to each nest and place the hen on them gently, preferably at night.

FEEDING SETTING HENS.—The seven hens started to work, there will follow the regular routine of one daily feed,—from seven to ten o'clock in the morning is a good time, and the time fixed upon should never be changed,—and an occasional dusting with insect powder. Corn or ordinary scratch food varied with an occasional bit of lettuce or fresh-cut clover is all that is needed, with plenty of water, sharp grit and charcoal on the side. Lift the hen gently off the nest when the feeding hour arrives by inserting the right hand under her breast, raising that portion of the body slowly from the eggs and eventually grasping her legs between the fingers to prevent breaking of eggs if she be inclined to struggle. Be sure that she does not retain any egg between her thighs as it is likely to fall and break. With the type of nest described in Figure 6 (New Jersey State Game Farm), the hen is placed for feeding in a slatted coop and returned to her nest by hand some twenty or thirty minutes later. The procedure with the Figure 5 (New York type) is to lift the roof of the coop slightly, take the hen out, place her in the wire run by raising its top, and let down the board forming the door to the coop. The loose slat is pulled to one side, permitting ingress following feeding. Many hens will return to the nests of their own accord. Those that do not are returned within half an hour. The door is placed in position again and all is secure for another twenty-four hours.

DUST HENS THREE TIMES.—Setting hens are dusted usually three times, the first as heretofore described, the second after they have been on the pheasant eggs ten or twelve days and the third time not less than four days before the hatch is due. So experienced a breeder as Mr. Adam Scott, manager of the Froh-Heim Game and Poultry Yards, on the estate of Mr. Grant B. Schley at Far Hills, New Jersey, omits the last dusting, declaring that he has had young birds killed shortly after hatching as the result of a windpipe clogged with dust inhaled from the body of the foster mother. This, however, is the only report of the sort I have received, and the method described above is quite generally followed.

PYRETHRUM BEST DUSTER.—Mr. Rogers strongly advises strictly fresh pyrethrum powder and asserts that some of the commercial

powders contain carbolic acid in sufficient quantities to injure surface veins and arteries.

HOW TO DUST.—Dusting is best done by two people, one holding the fowl and one applying the powder. Place the hen on her side on the bottom of a cracker box. Lift the wing on the upper side of the body and rub the dust well into her skin and on her breast. Repeat the action when she is turned on her other side and also rub the powder well into the feathers about her rump and the top and back of the head. The use of the box saves a great deal of powder from being wasted. Cloth drums especially designed for dusting are sold by poultry dealers but are not necessary. The best time for applying the powder is when the hens are taken off for feeding. If possible, it is a good idea to provide a bath of road dust or fine ashes in each run, but where many hens are being handled this is out of the question.

MITES.—These tiny red insects will frequently annoy a setting hen so that she will be broken up. They work at night and, if a hen is suspected of being the victim of their attack, it is well to make an examination of the bird and nest after dark, a pocket searchlight being well adapted to this purpose. They leave specks on the eggs and frequently cause the hen to assume a half-standing posture, and it is by these two signs that their presence is most frequently detected. Once the breeder is assured that they exist, the entire nest should be burned, the coop well sprayed with zenoleum, and moved to a new location. The hen and eggs may be lightly sprayed also.

BROKEN EGGS.—When an egg is broken, it is, of course, removed. The nest should be remade and such of the remaining eggs as have come in contact with the contents of the broken egg should be wiped with a clean cloth moistened with tepid water and dried with an unmoistened cloth.

It is well to have a few extra hens on domestic eggs so that they may be used if any of the regular setters are broken up. Either this precaution or the employment of a small incubator is almost a necessity.

It may be that our beginner at pheasant breeding has been compelled to start with purchased eggs instead of breeding stock and, if so, there is nothing to be added to what has been said above further than to advise the purchase of eggs as early in the season as possible. Place your order in February or March if you can, and preferably pay the higher price asked by reliable dealers. Names of dealers will be sent if inquiry is made of the American Game Protective Association, 2273 Woolworth Building, New York City. Most breeders keep shipped eggs twenty-four hours after receipt, turning them once in that time. Some hold that they may with safety be placed under the hen immediately.

CHAPTER VI

Taking Off the Hatch

We come now to one of the most interesting periods in the routine of pheasant breeding—the taking off of the hatch and its placing in the rearing field.

It usually takes from 23 to 24 days for ringneck eggs to incubate, though that period may be considerably lengthened and is sometimes shortened. Eggs that are late in hatching should be collected from the various nests and placed under hens whose eggs are slow in pipping. Such of the chicks of the latter as have hatched can be given to hens that are ready to be taken off with their broods.

HATCH COMPLETED IN 24 TO 36 HOURS.—Do not feed the setting hen from the time the eggs begin to pip till she is placed in the rearing field. The hatch will be completed from 24 to 36 hours after pipping commences. Do not remove the shells as the chicks come out, their sharp edges probably keep the hen from sitting too heavily on the newly-hatched chicks. The beginner will do well at this period to have complete confidence in the hen and let her alone for a full day after pipping starts. The hatch should in no case be taken off the nest until the latest chick is thoroughly dry, which will be, as stated above, from a day to a day and a half after it starts, and Superintendent Dunn of the New Jersey State Game Farm, finds that birds taken off 48 hours after pipping do best. The yolk in the body of the chick furnishes ample food up to this time. Indeed, there are well authenticated cases where young pheasants have passed the first six days of their existence without food and have apparently suffered no inconvenience, though in one case the domestic hen foster-mother died of starvation. The beginner is likely to worry a great deal at this point about food for the chicks, but he can be assured on the best of authority that all this is unnecessary.

If the New York type of hatching coop is employed (Figure 5, as described heretofore), the extra frame should be placed on that enclosing the nest as soon as pipping starts to prevent the early hatched chicks from starting on an exploration tour and probably perishing from cold.

TAKING THE BROOD TO THE REARING FIELD.—We will assume that the chicks have dried off well and are now ready for transportation to the rearing field. This is usually effected by taking the hen off first and placing her in a coarse sack. The chicks should be immediately placed in a box or basket deep enough to keep them from jumping out and lined so that there will be no chance of their injuring themselves.

FIGURE 7.—Box for carrying newly-hatched chicks to rearing field used on New Jersey State Farm.

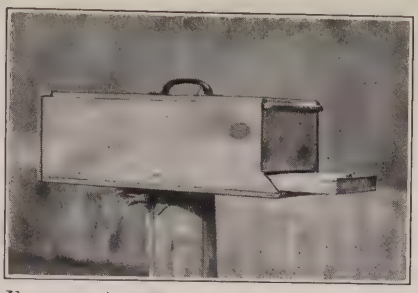

FIGURE 7-A.—Box similar to that pictured in Figure 7, but with a tank for warming chicks.

Place fine hay, grass or leaves in the bottom of the receptacle. When the weather is cold, this stage is a more or less critical one. At such a time, place a woolen cloth in the basket and cover it over after the chicks are in, leaving enough of an opening to furnish air for breathing.

BOX FOR TAKING CHICKS TO REARING FIELD.—Where breeding is done on a large scale, the box pictured in Figure 7 will be found most convenient. This is 26 inches long, 11¼ inches wide and 8½ inches high. It has 6 compartments, with division walls 4 inches apart, each holding 20 chicks, the brood that is usually allotted to each hen foster mother, unless bantams are used, when 12 to 15 are the limit. A sliding door covers the box. One inch from the end of this door is an opening 5 inches long and 3 inches wide, closed with a slide when not in use. Through this the chicks are taken out when the rearing field is reached. A row of half-inch holes is bored on either side of the box an inch or two from the top for ventilation and the bottoms of the compartments are lined with leaves or grass. The box should be sprayed with disinfectant following its use. Mr. Neil Clark uses a similar box, but employs a warm water tank, see Figure 7-A.

CONSOLIDATING BROODS.—As each foster mother can hover 20 chicks and as only 15 eggs were allotted to each setting hen, and as, of course, all these will not hatch, it will be seen that two or three of the setting hens can be dispensed with. Some breeders put a second clutch of eggs under such hens and thus induce them to continue their setting for another 24 days. Except in emergency, this does not seem to be good practice and it comes very near to bordering on the cruel. In such circumstances, the hen lacks the body heat necessary for the best results in incubation, as her system is greatly depleted.

Do not use nesting coops or boxes a second time till nest contents have been burned and coops thoroughly sprayed. If Figure 5 is used, move it to fresh ground for the second hatch.

CHAPTER VII

The Rearing Field

Having our broods safely started toward the rearing field, it is necessary to halt the action for a moment to consider this very important subject, for it is on this spot that the chicks will spend the critical period of their development, and a happily selected location will go far toward making a season successful.

MATURING BIRDS AFFECTED BY CHARACTER OF SOIL.—There is a very intimate relationship between the soil and the growth of the young bird, and this cannot be too firmly brought home to the beginner. Invariably, birds do better in certain fields than others when, even to the experienced eye, there is no discernible difference. Not only is this true, but in the same field one brood will thrive while another forty or fifty yards away and apparently facing the same conditions, will droop. Here is where the skilled breeder displays much of his ability. He cannot always tell why birds thrive in one spot and droop in another, but he can, by constant observation and moving of coops, see that birds that are not doing well are given a more promising location. Sometimes the birds in an entire field will get to the stage where their development seems to be arrested. Such a crisis is recognized by the experienced eye and it is met by the immediate abandonment of the field. If an epidemic breaks out, it is frequently combatted by the transfer of all the chicks to another location.

THE REQUISITES.—In choosing a site for a rearing field, it should be borne in mind that sun and shade, abundant insect life, and a well drained soil are prime requisites. The small breeder on the average farm will rarely have trouble in discovering a spot that will fulfill these, but where the operation is being carried on on a large scale, it is customary to make special preparation of fields for rearing purposes. For the small breeder, an orchard frequently meets the requirements nicely. A site with any sort of thicket or dense growth nearby is usually good, and if there be a bit of swale available, the location of the coops in its neighborhood will often prove a happy move. A garden frequently is ideal, but beware of a location that will flood quickly. In choosing a spot on which to rear a few birds, however, one must bear in mind that proximity to the family dwelling will frequently serve to make the combat with vermin an easier one.

An experiment conducted by the Clove Valley Rod and Gun Club of Dutchess County, New York, seems to prove an old meadow an undesirable

location for a rearing field. I am in receipt of the following statement on the subject from Mr. Neil Clark, head game keeper of the club:

> "This year we placed a few birds in an old meadow, which had not been plowed for many years. It contained many wire worms which apparently did not agree with the young pheasants, with the result that we lost a large percentage of them. Meadows which have been seeded for only one, two or three years are apparently much better adapted for rearing fields."

Mr. Clark has found that a strip of corn sowed across a rearing field is excellent for the young birds in affording shade and protection from birds of prey. Mr. Rogers sows similar strips of buckwheat across his rearing fields. Some of this is cut green and fed to breeders at the conclusion of the laying season, and what is allowed to stand proves a powerful attraction to escaped birds, many of which are trapped.

SOWING THE FIELD.—Superintendent Harry T. Rogers of the New York State Game Farms prepares his rearing field by sowing to each acre a mixture of alsyke, 4 quarts; mammoth red, 2 quarts; red top, 2 quarts and timothy, 8 quarts. The ground is ploughed, harrowed and rolled and the seed mixture is sowed with a drill. It is customary to sow at the same time some grain crop such as oats, which are put in in April; wheat, September; buckwheat, June; barley, the latter part of March. The grain crop is mowed at its maturity, following which the grasses and clovers sowed with it will come forth in due season and furnish cover for the following spring.

THE DUNN METHOD.—On the New Jersey Farm, Superintendent Dunn sows at the rate of one-half a bushel to the acre the following mixture:

Red clover, 3 bushels; alsyke, 1 bushel; timothy, 2 bushels; red top grass seed, 2 bushels; English rye grass, 1 bushel. This mixture is sown the last week in March or the first in April, the ground having been ploughed the previous fall and spread with stable manure. Before sowing, the field is again ploughed and is harrowed both ways. The mixture is then sown with a drill, oats being put in at the same time at the rate of 2 bushels to the acre. Harrowing is done once more. When the oats are three or four inches high, the field is rolled, making a smooth surface for the coops that will be placed on it later. The oats soon recover from the rolling and when cut are stacked for winter feed for the adult birds. They are not threshed.

Fields thus prepared afford an ideal breeding place for the insect life which is so necessary to the development of the chick; they furnish shade and cover, keep the ground from drying up, and give an abundance of succulent food.

Mr. Neil Clark likes a strip of corn for his rearing fields.

The small breeder will rarely need to fence the ground on which his young birds are reared, but most large breeders find this necessary. A four-foot fence of woven wire, ½-inch mesh, is usually placed about the rearing field and the wire is run under ground six inches to a foot as a protection from vermin. Mr. Rogers does not fence his rearing fields, but seems by skillful handling to lose few birds. Mr. Dunn lets the bottom of his wire fence rest upon the surface of the ground and buries it to a depth of several inches by running a furrow on one or both sides of it.

CHAPTER VIII

Locating Broods in Rearing Field

We left our beginner in pheasant breeding in the midst of the transfer of his hatch to the place selected for rearing, in order to treat adequately the selection and preparation of the rearing field; the foster mothers were placed in coarse sacks, the chicks in a basket and the start had been made for the home selected for the interesting newcomers. We will assume that the New York type of coop (Figure 5) has been selected. The procedure is as follows:

THE PROCEDURE.—There should have been previously provided one coop more than necessary to accommodate the seven hens which were employed in incubating the 105 eggs that were put down, making the total number of coops eight. This eighth coop, before the first hatched chicks were taken off should have been placed on the site determined on for rearing purposes, facing the direction which will afford the greatest amount of shade for its front, unless the weather be particularly cool. The northwest is the direction which will usually give this condition. Mr. Dunn faces his rearing coops south, using the "shutter" previously mentioned for shading them if the sun gets too hot. Having located the coop, trample the grass within it well and uproot any long blades. Also, pull up the grass from a small space directly in front of the coop in order that the chicks may better see the food that will be thrown to them there. Be sure that there is no space about the bottom of the coop that will permit the chicks to escape.

FRAME RUN IN FRONT OF COOP.—Next place in front of the coop the board run or frame (Figure 6-A). This is employed on both the New Jersey and New York Farms and is made of ⅞-inch stuff. It is 2 feet wide, 3 feet long and 1 foot high, and is braced at the closed end with two strips nailed diagonally across the top at the closed end of the run. Fasten securely the slat in front of the coop (New York type) that was kept loose during the incubation period in order to give the hen ingress from the wire run in front of the coop when she had finished feeding, and all will be ready for the reception of the hen and her brood. Place the hen and chicks in the coop, the chicks being put in first, in one corner. Place the door in front of the coop and thus bar egress. The first feed is given as soon as the chicks cease brooding and commence to search for food. Mr. Rogers places the first feed inside the coop but most breeders put it immediately outside unless the ground is wet. The chicks are allowed

Typical pheasant rearing field showing arrangement of coops in rows facing on "rides."

access to the board run the day following their placing in the rearing field and some breeders permit this from the first if the weather be warm.

REARING COOPS 40 YARDS APART.—The first hatch located, disinfect thoroughly by spraying the coop from which it was taken and place this at least 40 yards from the coop first located in the rearing field, repeating the routine described in detail above, till the last chicks are removed and located in their new home. On large farms it is sometimes necessary to put coops only 25 yards apart, but this should be avoided if possible. Always hold chicks loosely; squeezing is likely to injure them seriously. Bear in mind in taking off the hatch that the sooner mother and chicks are reunited the better.

AS TO "RIDES."—In large operations the rearing coops are placed in rows, and swaths or "rides," as the British game keepers call them, are cut through the grass directly in front of them, forming a succession of streets, as it were. These are shown in the illustration on this page, taken from a photograph of a rearing field at the Clove Valley Rod and Gun Club in Dutchess County, New York. The ride has its good and bad points. It makes the birds somewhat easier prey for vermin in the opinion of some but, on the other hand, it is claimed by its advocates that it lessens the wetting the chicks get from early morning dew and keeps the hen from trampling her chicks. It certainly does make feeding drier work for the man in charge of the field.

Where breeding is done on a large scale, it is customary to allot from

1200 to 1500 birds to each rearing field, one man being responsible for their care. This individual usually sleeps in a shack by the side of the field, a shotgun always in reach to repel the vermin that the display of so many tempting morsels invariably attracts.

ORDINARY WETTING SELDOM HURTS.—Pheasant chicks apparently are not hurt by dew and they can withstand a pretty good wetting from rain provided they have a dry coop to which to retire. A chick will usually come through a hard rain all right, if it has for protection cover of sufficient strength to break the force of the downpour, but they succumb in large numbers if subjected to the full force of a hard rain. Mr. Rogers thinks it best to let the chicks alone if they get caught in a storm, arguing that any efforts that are made will only result in scattering them.

The procedure with the Dunn type of rearing coop (Figure 6-A, page 26) differs so little from the description given above that it is not necessary to detail it.

It is proper to hark back at this juncture to our breeding pen for a moment and remark that our beginner will have placed his second lot of 105 eggs under hens some time before the first lot is hatched.

THE FIRST FEED.—Feed your newly-hatched chicks when they have finished their first brooding as described above. A delay of two or three hours beyond this time will do no harm, however. Four feeds a day, the first as early in the morning as possible, are necessary and five are still better. The first feed on large farms is frequently given by 5:30 or 6 o'clock, but this will hardly be possible in many cases where pheasant rearing is merely one of the incidents of the general farm activities. Not more than three hours should elapse between each feed.

A good first feed consists of chopped, hard-boiled egg mixed with cracker dust to make it dry and crumbly. This is given on the New York State Farm the first four or five days. A baking powder can makes an excellent chopper. A utensil known as a "potato ricer," made by the Grey Iron Casting Company of Mt. Joy, Pa., and obtainable at most department stores is used on some farms, but beware of a similar utensil which is much cheaper and is likely to leave portions of the egg in such shape as to choke the chicks. It is also hard to clean. On some large farms a meat chopper is used for breaking up the egg. Whatever instrument is employed, it should be remembered that the egg should not be broken up too finely.

Round milk crackers are best for dust and a rolling pin will quickly pulverize them. Do not overlook uncrushed pieces of cracker which may choke the chicks. After the eggs are chopped, sprinkle them lightly

Rearing field, Sherburne Game Farm. Note strips of buckwheat which furnish cover for young birds and serve to keep the birds to the field as they get old enough to wander.

with the cracker dust, work it in with the fingers and repeat the action till the eggs are dry and crumbly.

HALF AN EGG TO EACH BROOD.—Half an egg to each brood of twenty chicks will be ample at first. It is quite likely that not much more than half this amount will be taken the first few days. Use good eggs. Take as much of the prepared egg as you can hold with the thumb and first two fingers and throw it directly in front of the coop, together with some whole corn for the hen. She will quickly call the chicks to their meal. Pass on to the remaining coops and when the last has been attended to, return to the brood first fed. If all the food has been taken and the chicks still seem hungry, throw down a second pinch of egg. If, on the other hand, all the food has not been consumed and the chicks are no longer working at it, remove it, as food that has been exposed to the sun long enough to sour is very dangerous. Throw a handful of chick charcoal and grit on the ground by the egg feed.

WATER. SHALL IT BE GIVEN CHICKS?—No water is given the chicks during the first four or five days, their first taste being had when the frame run is removed from the front of the coop. Their food during this time contains a good deal of moisture and they get the dew off the grass in the frame run in which they are confined by stripping the blade cleverly with their bills. On the New Jersey Farm no water is given young birds during the first month or six weeks. The foster mothers of the chicks are supplied with water through the medium of boiled whole corn which is too large, of course, for the young birds to swallow. It is the general

practice among game keepers who follow English methods more or less closely not to supply water directly to the chicks. This is done on the theory that if water is supplied in receptacles some of the chicks are sure to develop an abnormal craving for it and, literally, drink themselves to death. The English practice also minimizes the amount of work to be done in the rearing field and the fine-looking birds resulting from it seem to indicate that, intelligently followed, chicks will do well under it.

Since writing the above paragraph, I have received the following from Mr. Duncan Dunn in which he amplifies his views on the subject of water for young birds:

> I do not water any of my birds until they are more than a month old, as I make my feed sufficiently moist to supply the water needed. Of course, if I had a field that did not have much grass on it I would water once a day. Experiments I have made have demonstrated that birds not supplied with water have done as well again as those that had it. Where there is a good stand of grass the dew that falls upon it gives the young birds all the water they need.

On the other hand, Mr. Rogers and his followers provide water in enamelware pans holding one and one-half quarts and which are 1½ inches deep, after the fourth or fifth day, when the board frame that has confined the chicks is removed. These can be had at the five and ten cent stores and are preferable, in my opinion, to the cone-shaped drinking fountain, as well as being much cheaper. The water is placed in the tall grass some 8 or 10 feet from the coop and is shaded by its door, one end of which rests on the ground and the other on a stake so as to afford sufficient space for shoving the pan under. Water exposed to the sun is most dangerous. It should be changed frequently and the pans should be kept very clean. An occasional scalding is good and if disease breaks out, this should be done every day. The breeder who contemplates action on a large scale may carefully study both systems and determine for himself which he prefers to follow, but the man who has only a few birds will probably make no mistake in furnishing them water as indicated.

WIDER RANGE GIVEN AFTER 4 OR 5 DAYS.—By the fourth or fifth day the chicks will have learned the call of the hen and will have been brought to look on the coop as home. They are then ready to be given a wider range, if the weather is good, and the frame run (Figure 6-A) that has hitherto limited their roaming is taken away, the foster mother being still confined to the coop, however. This will add greatly to the supply of insect life to which the birds will have access, and they should go forward rapidly. From the day of their release, the rearing coops should

be moved daily. In large operations an extra coop is an advantage in doing this. The keeper starts work in a field by placing the extra coop on the spot he wishes the first brood to be moved to occupy and puts the hen therein. This releases the coop she has been taken from and, using it, the action is repeated till the coops throughout the field have been moved.

On the New York Farms, the hen is frequently given free range with the brood after the first week or ten days. This works satisfactorily partly as the result of the fact that the rearing coops are placed unusually far apart, minimizing the chances of fights among the hen mothers, and partly due to the skill of Mr. and Mrs. Rogers in selecting mothers and handling them in the rearing field. Many breeders keep the foster mother confined till the chicks are weaned.

LOOK OUT FOR SICK BIRDS.—The sharpest look-out must be kept for sick birds. Once it is established that a bird is sick, it is much better to wring his neck and burn him forthwith so that the menace he affords to the other chicks will be removed. This is one of the hardest things to induce beginners to do. Some chicks will appear very weak when first taken off the nest and may continue so till the first feed or until a nice bug has been eaten and weakness of this sort should not be confused with actual sickness.

Some breeders close their birds in every night and others rarely or never do so. If trouble is had with vermin, this is frequently necessary, but the earlier start at feeding the chicks can make in the morning and the better ventilation the coop has, the more certainly they will thrive.

Young birds are fully feathered by the end of three weeks with the exception of the top of the head and back of the neck. If these do not develop within five or six weeks, it not infrequently indicates coming disease. Full feathering is also sometimes delayed by unfavorable weather during the early days of the bird's life or by the presence of lice.

This shows rearing coop placed in a "ride" and illustrates well the heavy stand of clover and mixed grasses that the experienced pheasant breeder gets in his rearing fields to furnish cover and insects for his young birds.

CHAPTER IX

Feeding Pheasants in the Rearing Field

The complete feeding regimen for pheasants as practiced by Superintendent Rogers of the New York State Game Farms, from hatching till the birds are old enough to be placed on a straight dry grain diet is given herewith:

FIRST FOUR DAYS

Feed 4 or 5 times daily with not more than 3 hours between meals.

Hard boiled egg mixed with cracker dust till dry and crumbly—chick charcoal and grit—no water.

FIFTH TO SIXTIETH DAY

Feed 4 times daily fifth to thirtieth day and 3 times thereafter.

a. Wet mash: To the ration described immediately above add pheasant meal (Wallace Evans, St. Charles, Ill., preferred), fine oyster shell, middlings, kiln-dried corn meal (Buffalo Cereal Co.'s preferred) boiled rice and bone meal. Hulled oats (R. D. Eaton, Norwich, N. Y.) may be added on the tenth day with profit.

b. Dry feed. During the same period begin feeding ordinary chick grain mixture obtainable at poultry supply dealers, mixing grit and charcoal with it. Give one feed of this daily (the last). Canary and hemp seed may be mixed with the chick grain in small portion from time to time, but give very little of the latter.

No meat substitute for insect life is prescribed by Mr. Rogers, as his birds have such extensive range that they do not need it. Where the range is limited, he advises boiled beef liver put through a meat chopper and mixed with the wet mash at the rate of a handful to each gallon. The small breeder whose young birds have free range need not bother about feeding meat. Crissel, a beef scrap, obtainable at poultry dealers, is used by many breeders, but Mr. Rogers prefers the liver.

After the twelfth day, give two dry and two wet feeds, the dry the last of the day, and from the eighteenth day, give only one wet feed a day, making it the first.

After the sixteenth day, use the second of the three sizes of chick grain.

From the sixtieth day on, dry feed is given principally, the third or largest size of chick grain or, more properly, scratch food being employed; the general feeding system as heretofore described for adult birds is followed, except that the wet mash is fed once a day every other day till freezing weather ensues and an occasional feed of crissel is given dry on a board, charcoal being mixed with it.

In preparing the wet mash, the egg should gradually be decreased and the pheasant meal increased as the birds get older. It is important to bear in mind that egg and pheasant meal are the principal ingredients.

Mr. Rogers uses no barley meal or rye because of the tendency of these grains to sour.

If the hens are allowed to run loose in the rearing field with their broods, it is wise to take a different course each time the round of the field is made at feeding time. Otherwise, they quickly learn the keeper's route and the congestion that follows frequently leads to fights among them.

PREPARATION OF WET MASH.—Chop the hard-boiled eggs and mix with cracker dust as previously described. Corn meal or middlings may be substituted for cracker dust. The next step is to prepare the pheasant meal, which is put in a separate dish and moistened slightly with water or milk. Work with the hands till thoroughly moist but not sloppy. Now, place the moistened pheasant meal in the receptacle containing the chopped egg and mix the two thoroughly by hand, adding enough corn meal and middlings to make the mash crumbly. Rice may be added from time to time. It checks looseness of the bowels. It should be well boiled with every grain separate. In preparing it, place the grains in a double boiler, filled with hot water, and boil ten minutes or more. When cool, mix first with corn meal and then add to mash, working it well in.

BONE MEAL.—Bone meal should be occasionally added to the mash, but never constitute more than ten per cent. of it.

It is impossible to give the relative amounts employed in making the wet mash feed described above, as enough of each ingredient must be added to constitute a dry, crumbly mass which will easily fall apart when thrown upon the ground. The hard-boiled egg and pheasant meal make the bulk of the mass and, as stated above, the proportions of these vary with the age of the chick, the pheasant meal being increased as time goes on.

SIMPLER FEEDING POSSIBLE.—Where only a few chicks are being reared and birds have free range, the mash can be considerably simplified, the number of feeds a day cut down after the first ten days and the percentage of dry feeds can be increased sooner. The insects that the birds will get on the large range that is possible where only a few are reared benefit them vastly more than any food that may be given them.

Experiments conducted on a small scale in times past indicate that it may be possible to rear pheasants successfully on dry feeding alone, starting the young birds off on chick grain and adding wheat after the first week to create a more stimulating ration. So far, no one breeding birds on a large scale has been willing to take the risk. This is a matter which the

Keeper's shack, boiler, sieves and other paraphernalia used in feeding and caring for young pheasants in the rearing field at the New Jersey State Game Farm.

Department of Game Breeding of the American Game Protective Association proposes to try out and report on during the coming season.

CURDS.—Curds are invaluable to correct intestinal troubles so frequently encountered in game bird rearing and which manifest themselves chiefly in cholera and scours, two diseases which find their counterpart to an extent, at least, in typhoid fever and diarrhoea in human beings. Curds are best prepared by placing sweet milk on the back of the kitchen stove and letting it remain two or three hours till it has assumed a leathery texture. When taken off, the contents should be placed in a cheesecloth bag and strained. The dry, crumbly mass that remains is what is given the birds. Salt must not be used. Curds may be fed several times a week as an extra feed and also placed before the birds along with a regular wet or dry feed. It should be thrown on the ground, as all other feed should, not fed in a trough, and, after the birds are allowed to range, care should be taken that feed is not thrown on the same spot from day to day.

Superintendent Duncan Dunn of the New Jersey State Game Farm has done particularly brilliant work in turning out splendid birds in large quantities, on a comparatively restricted area,—the severest test to which the breeder can be put. His system of feeding is, therefore, of particular interest.

DUNN FEEDING SYSTEM.—First three days, chopped hard-boiled egg and Spratt's fine ground oatmeal.

After the third day, mix in Spratt's number 12 pheasant meal, first scalding it and using the oatmeal to bring it to a crumbly state.

On the fifth day, add chick grain, scalding it and the pheasant meal together and later mixing the two with the egg. Increase the proportion of chick grain till the birds are two weeks old.

At the end of two weeks, substitute number 5 pheasant meal for number 12 and add rice to the second and third feeds of the day. Boil the rice separately and mix it in by hand.

A pinch of bone meal should be added to the mash at each feed after the first week.

In wet weather, after the first week, a dash of cardiac in the feed, is recommended.

USE OF CRISSEL.—At the commencement of the third week, crissel (a beef scrap substitute for insect food manufactured by Spratt's) and Spratt's pheasant manna (a grain mixture), are added to the mash. The crissel is first placed in a bucket of warm water and the impurities are removed as they come to the surface. It is then scalded with boiling water and left to drain in a sieve (a simple frame 18 x 18 inches with a fly screen bottom). The pheasant manna is also scalded and drained and mixed with boiled rice and scratch food, the two last named being boiled together when the birds reach this age. The mash resulting from the mixture of these ingredients is given at the first three feeds of the day and dry scratch food alone is given at the fourth.

At the commencement of the fourth week, the daily feeds are reduced from four to three.

As it is the custom in New Jersey to distribute pheasants reared on the state farm the following spring, the pens in which the birds are placed for the winter when, at the age of six weeks, they are taken from the rearing field, are quite well filled and so the combination of wet and dry feeds given immediately above is continued but Mr. Dunn, with Mr. Rogers, recommends dry feeds from the sixth week if the birds have free range.

DRY MASH IN HOPPER.—Spratt's egg-laying mash, a dry mash, is kept in a hopper before the young birds when they are put in the winter pens on the New Jersey Farm and corn meal is added to it. It keeps down feather-eating which always threatens when birds are confined.

Mr. Dunn has experimented with raw eggs as a feed for young birds with good results but has not adopted this feed generally. When employed it is first given from the fifth to the seventh day. The egg is first beaten well and then mixed with Spratt's number 12 pheasant meal, a little scalding water being added, but care is taken to avoid sloppiness. Unscalded chick grain is sometimes mixed in.

FIGURE 8.—Trap with funnel-shaped entrance for catching pheasants.

FIGURE 8-A.—Another view of pheasant trap, taken at outside opening of funnel-shaped entrance.

On the Sherburne Farm, narrow patches of buckwheat are sown in all the rearing fields and the chicks spend a good deal of time in them. Some of the buckwheat is cut green and given the adult pheasants for succulence. What remains serves to hold any escaped birds to the field. Never place the rearing coop in standing grain; always locate it on turf. Soft ground is good for young birds to run in but not adapted to the location of coops.

PHEASANT TRAP.—Various forms of traps are used for catching young pheasants in the rearing field, and some device of this sort is particularly needed when the time comes to remove the birds from the field. The trap pictured in Figure 8 is the one used on the New Jersey State Farm, and it works well. It is 18 inches high, 6 feet long and 3 feet wide. The framework is composed of 1 x 2 stuff and this is covered with one-inch poultry netting. A hinged door in the center of the top is 2 feet long and 1 foot wide. The trapped birds are removed through this. At one end of the trap the wire netting, instead of being nailed flush across, is drawn within the trap a distance of 2 feet or more, so as to create a funnel-

shaped entrance which is 1 foot wide at the mouth and tapers to 3 inches at the small end. By baiting this with grain, the birds walk into the trap readily. This device should be anchored with weights or guy ropes if there is any chance of vermin getting in, as the captive will escape otherwise by crawling underneath the edge, as the trap is very light in weight.

On the Sherburne Farm, some birds are caught by closing the rearing coop the previous evening, after the birds have entered, but as the larger birds do not go into the coops at night, further measures are necessary. These are supplied by the use of the covered wire run which is employed earlier in the season to confine the setting hens when taken off the nest for feeding. The run is placed in front of a rearing coop and just far enough from it to permit the pheasants to enter. A grain bait is then put down. When the run is filled, it may be quickly pulled over till it comes in contact with the front of the coop, by a person approaching from the rear of the coop. The birds are then imprisoned and, as the top of the run is removable, they can be taken out. A word of explanation here will prevent the escape of a good many captured birds. In taking the pheasants out of the run, shove the movable cover to one side a distance sufficient to admit your right arm and no farther. This gives free play to the arm within the run and the aperture created is not large enough to permit of the escape of any birds. A round net 18 inches across with a 5-foot handle is employed in catching adult birds when confined in pens. This is similar to but larger than the landing net employed in fishing.

In removing the young birds that have been trapped in the rearing field from that enclosure to the winter pens, Mr. Dunn employs the carrying box pictured in Figure 9. It is 5½ feet long, 2 feet 4 inches wide and 14 inches high. A sliding door, horizontal, on top affords ingress for the birds and they are released through two other sliding doors, vertical, at either end. One of these slides up and down and constitutes the entire end of the box, while the other moves from right to left and constitutes but half the end. Ventilation holes are bored in the sides and handles are provided for carrying. Leaves or fine hay are placed on the bottom.

FIGURE 9.—Box employed on New Jersey Farm for carrying birds from rearing field to winter pens.

REGULARITY COUNTS.—The amateur breeder will have to acquire most of his knowledge regarding the management of the rearing field from experience. Absolute regularity in feeding, and in moving coops, close observance of the chicks and quick action when disease threatens, unfailing vigilance and the application of gray matter in combatting the vermin that always menace game, foresight in avoiding the heavy losses that come so frequently from rain storms—these are some of the things that are demanded of him. Little things, petty details, count doubly at this time. It is not unusual for the keeper to put in twelve or fourteen hours in the rearing field in the course of a day and night and the wonder is that most of them are able to maintain so pleasant a disposition, despite the heavy strain on body and nerves. The man who brings through a goodly percentage of the birds in the field entrusted to him has thereby proved himself possessed of skill and cunning and trustworthiness in the highest degree. Such a feat is no mean achievement and it makes heavy drains on many of the most admirable qualities that man possesses—courage, patience, painstaking attention to detail, faithfulness, industry, intuition, plodding perseverance in the face of a routine that in time must become deadly—all of these, the successful game keeper must possess.

We have now completed the annual cycle of activities on the pheasant farm. Starting with adult birds acquired for breeding stock, we have followed the various developments to the point where the year's hatch is ready for disposal and preparations for another year's activities are due.

Pen of ringneck hens, Sherburne Farm.

CHAPTER X

Combatting Vermin

A volume might well be devoted to this subject alone and it is impossible within the covers of this work to treat it in detail. In the first place, the small breeder is not likely to have a great deal of trouble, but where young birds are congregated by the thousands in the various rearing fields of one game farm, there the vermin will flock and it is a constant battle of wits between man and the birds and mammals of prey. Yet, no game breeder of wide experience and real ability fails to win his fight nine times out of ten and the smaller man by study and patience can do so, too.

Among the creatures which prey on pheasants may be mentioned cats, rats, skunks, weasels, foxes, minks, hawks, crow blackbirds, owls, crows, blue jays and snakes, black snakes particularly. Red squirrels and chipmonks have been known to break the legs of pheasants and otherwise attack them. A good shotgun and eternal vigilance in seeking opportunity to use it is the first suggestion to be made.

CATS.—Even if you do not keep a cat, you will be surprised at the number of these highly destructive creatures roaming the countryside in search of prey if you set out a few cat traps. An ordinary rabbit trap made a little larger than usual will do. The Greenwich, Connecticut, Bird Protective Society sells a most effective box trap for cats at $3.50. In its literature it suggests a fish head or raw meat as bait and advises placing the trap in shrubbery or having it otherwise partly concealed. The David T. Abercrombie Co., 311 Broadway, New York City, carries a box trap that automatically chloroforms the cat.

Keep no cat yourself. They do not destroy birds as a rule when anyone is looking and the hour following daybreak is their favorite time for hunting, so the oft-repeated statement, "but my cat doesn't kill birds," is seldom based on full knowledge of the animal's movements. Cats have been proved by medical authorities to be carriers of the germs of scarlet fever, diphtheria, tuberculosis and many other frightful diseases. See "The Cat and Transmission of Disease," by Dr. C. A. Osborne, Biological Department, Clark University, Worcester, Mass.

In common with practically all other vermin, cats are most destructive during the breeding season, when it is impossible or unwise to confine the young in covered pens.

RATS.—The best information for combatting rats within my knowledge is contained in "Rats and Rat Riddance," by Dr. Edward Howe Forbush, the well-known state ornithologist of Massachusetts, and readers

of this manual are referred to it for much more complete information than it is possible to give here. It is a state publication and can be obtained by addressing the State Board of Agriculture at Boston. The following excerpt from Dr. Forbush's brochure briefly summarizes the means of ridding a place of rats:

> "There is no royal, easy and immediate road to rat riddance. It requires continuous mental and physical exertion to banish the rat, but it can be done, and a reasonable expenditure to that end is a wise economy. Extermination is too much to hope for, and banishment from large areas cannot be expected without great co-operative effort, but the individual can clear his premises of rats provided the conditions are first made right. The means for ridding premises of rats may be outlined as follows:
>
> "(1) Rat eviction: (a) destroying rat habitations and harboring places; (b) rat-proofing buildings.
>
> "(2) Rat starvation: (a) disposal of edible garbage and refuse; (b) rat-proofing receptacles for all sorts of edible materials.
>
> "(3) Rat slaughter: (a) traps; (b) poisons, chemical and biological; (c) shooting, clubbing, drowning, etc.; (d) encouraging natural enemies—owls, dogs, ferrets, cats, etc.
>
> "(4) Rat driving and harrying.
>
> "(5) Preventing rat multiplication: (a) all the above.
>
> "Not all of these methods are necessary in every case, but all are useful under certain circumstances. Methods of permanent eviction come first, as it is of little use to extirpate rats and then invite others to come in by continuing favorable conditions, such as a plentiful, accessible supply of food and numerous excellent breeding places."

RAT STARVATION.—The first step in combatting rats seems to be to make rat-proof the receptacles in which all grain and other food is kept and to do away with woodpiles and other places that furnish a harbor for the rodents.

TRAPS VERSUS POISON.—Dr. Forbush much prefers traps to poison and clearly shows the very great risks incurred when the latter is resorted to. The Schuyler trap is specially commended. Effective rat traps can be purchased for ten cents each at the 5 and 10 cent stores, though they lack something in durability. Bacon or strong toasted cheese makes good bait. Traps should be scalded and dried. They should be handled with gloves scented with a drop or two of the oils of anise, caraway or rhodium. Handle the gloves themselves as little as possible. The bait is scented with a single drop of anise or caraway oil dropped on a piece of

paper and, with it, rubbed on the bait. Traps should always be anchored. They are frequently more effective if covered with chaff, fine hay or other litter and it is well to place them behind boxes, barrels and so forth in the natural pathway of the rat.

Mr. Rogers states that he uses poison effectively for rats at the State Game Farm at Sherburne, N. Y., by putting it on a small shelf inside a box placed bottom up. An entrance hole is bored in one side of the box and the shelf is attached to the opposite side, a partition extending half way up from the floor intervening. The poison, dry corn meal mixed with strychnine, is placed on the shelf and the partition makes it impossible for the rat to carry away any of the poisoned bait.

VIRUS TESTIMONY CONFLICTING.—There are conflicting reports regarding the various viruses used to inoculate rats and destroy them wholesale by spreading disease. Some hold that rats become immune to them within a few generations while others contend that there is a great difference in the effectiveness of the various viruses, and that the best are not subject to this criticism. Mr. J. P. Kellogg states that the Pasteur virus has been used at the Rumson Country Club of Rumson, New Jersey, where mallards are reared in considerable numbers, and that it has been found quite satisfactory. This virus can be obtained of the Pasteur Laboratories, 366 West Eleventh Street, New York City. It is used in liquid form for large areas and gelatin for smaller ones. The liquid form is sold in two sizes, at $1 and $1.50 respectively. The gelatin form is priced at $.50 and $.75.

USE OF ARSENIC.—The following method of using arsenic is taken from Dr. Forbush:

> "A time-honored way of administering arsenic to rats is to place pieces of bread and butter sprinkled with sugar near their runs night after night, until they have learned where to look for them and their suspicions have been allayed, then to spread finely powdered arsenic thinly over both sides of slices of bread and spread soft butter over the arsenic, or, better, mix arsenic with the butter before spreading, and sprinkle with sugar as before. The poison becomes incorporated with the butter, and is eaten without suspicion by the cunning rodents. Sometimes, however, the sly rat will eat the bread and avoid the poisoned butter, and it is better to melt the butter, stir in an equal quantity of arsenic, and pour the mixture on both sides of the bread, so that it will soak in. The bread may be then cut in pieces about an inch square and each piece well sprinkled with powdered sugar. One piece should be fatal to any rat that will eat it."

Rats seek water when poisoned and are likely to pollute any receptacle in which it is contained by dying within it or vomiting into it. Some breeders of birds make a practice of placing a vessel containing poisoned water near the poisoned bait so that the rat may get a double dose when he attempts to slake his thirst.

GOVERNMENT RAT FORMULA.—The poison formula used by government officials at San Francisco in combatting rats is detailed by Dr. Forbush as follows:

White arsenic, finely powdered	4 pounds
Cheese	4 pounds
Glycerine	6 ounces
Water	1½ gallons
Corn meal	10 pounds
Black analine, sufficient to color to a slate gray.	
Oil of anise	½ ounce

"Melt the cheese with the glycerine and one-half gallon of the water, then add the corn meal and the balance of water, and continue to heat until the corn meal is thoroughly cooked. Then stir in the arsenic and black aniline, and lastly add the oil of anise. It may require more or less water for the above formula, according to the amount of starch in the corn meal, but the quantities as given above are for average quality of corn meal.

"It is essential in the preparation of this poison that the arsenic be powdered as finely as possible, in order that there shall be no grit in the paste when completed. The black aniline is added until the color of the paste is a slate gray, the idea being to have the color of the poison approximately the same as that of the surrounding ground. In this manner it does not attract the attention of children, dogs, chickens or other animals.

"In the preparation of the paste none of the ingredients should be handled by the bare hands, as there is reason to believe that the odor of the human being attaches to the poison, and in some instances may render the rat suspicious of it.

"The paste when finished is placed in ordinary tin fruit cans, each can containing four pounds of paste. Each man places one can per day, and each can of four pounds should be sufficient to poison approximately from 800 to 1,000 holes or runs. The poison is placed with a small mixing spoon, somewhat similar to a cheese scoop, and a piece approximately the size of a hazelnut is placed in each hole or rat-run, in such manner as to be thoroughly concealed from the observation of any person or animal except the rat which uses the hole or run,

"The glycerine keeps the paste moist and in a fresh condition practically indefinitely, and it was not unusual to learn of dead rats being found in a vicinity where poison had been placed three or four weeks prior to the discovery of the dead animals.

"Probably this is one of the most deadly arsenical mixtures ever invented, but if rats do not take it one of the others least resembling it should be tried. Where they will take no arsenical mixture, as is sometimes the case, other poisons may be resorted to. My opinion is that the quantity of arsenic should not be less than 8 or 10 per cent. of the whole."

WALLACE EVANS ON RATS.—Replying to a query sent him recently as to his methods for combatting rats, Mr. Wallace Evans of St. Charles, Illinois, the largest commercial breeder of pheasants in the country, wrote me as follows:

"I find it a hard battle to keep down the rats on my farm. Where there is so much feed around for them, it means one continuous fight from year end to year end to keep them within bounds. I have a number of Airedale dogs trained especially for this purpose, and also keep several ferrets; with the additional aid of steel traps and various forms of automatic traps and various kinds of poisons, I am just able to hold my own against them and prevent them from doing any serious damage. No one method alone is effective where rats are necessarily so numerous; every possible scheme should be tried and a continuous fight kept up if you want to keep them under control."

THE AIREDALE.—A well-trained Airedale is indeed a valuable asset to a game farm. Mr. Harry T. Rogers' splendid dog, "Liz" is of this breed. She hunts his rearing fields day and night for vermin and woe to the cat, skunk or rat that she gets within striking distance of. As a young dog, "Liz" killed a cock pheasant. Seizing the bird by the legs, Mr. Rogers struck her with it a few times, and from that day this splendidly intelligent dog has never harmed a bird.

FUMIGATION.—Rats and other vermin that burrow in the earth can be effectively dealt with through the medium of carbon bi-sulphide. Having located a single hole, puff smoke into it with the ordinary bee smoker, using cotton waste to produce the smoke, and soon it will be seen issuing from the holes round about. These should be plugged at once with mud. Saturate a bunch of cotton with one and one-half to two ounces of carbon bi-sulphide and push well into the open hole. Next plug the hole, placing stones or brickbats in first and then seal it with mud. The stones will keep any loose earth from rolling down on the waste.

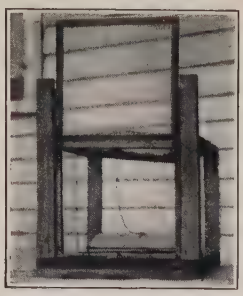

FIGURE 10-A.—Another view of the Evans' vermin trap.

FIGURE 10.—The effective Evans' vermin trap, showing an ermine which has been snared. Note the wire to the left which forms a runway the more surely to guide the vermin to the mouth of the trap. Photograph taken on Evans Game Farm, St. Charles, Illinois.

Carbon bi-sulphide is both inflammable and explosive and is to be handled with extreme care. It is best used in wet weather. The gas that proceeds from it tends to descend. Some users place the liquid in every hole located and others prefer to explode it, as this drives the gas to every part of the burrow. I am indebted to Dr. Forbush and Mr. Rogers for the information regarding carbon bi-sulphide.

DYNAMITE.—Mr. Rogers states that he has found dynamite effective in destroying burrowing vermin, especially weasels. The burrow located, three sticks of dynamite are placed two feet in the earth, equidistant from the burrow and each other. They are exploded simultaneously. A simple method of determining whether any burrowing animal is occupying a hole is to stop it up loosely and see whether the barrier is subsequently removed.

GENERAL VERMIN TRAP.—The all-metal trap, simple and inexpensive in construction, which is shown in Figures 10 and 10-A is used for vermin generally by both Mr. Wallace Evans and Mr. Harry T. Rogers. It can be made at home, the dimensions being, width, 16 inches, length, 24 inches, height, 12 inches. By many it is considered the best vermin trap known. The floor is of solid wood and a frame constructed of 1 x 2 material supports the three-eighths-inch wire cloth which encloses top and sides. A metal rod 13 inches in length is placed across the floor of the coop 9 inches from the rear, its ends passing through holes bored in angle irons screwed to the floor, which permit the rod to revolve. Attached to the

rod is a flat piece of sheet iron with rounded corners, 11 inches long and 4¾ inches wide. This is the pan on which the victim must step in order to reach the bait, a bird, rat or what not, which is hung from the rear wall of the trap. In the more modern models the pan is made of stiff wire cloth and the bait is fixed to it. A hole is bored through the center of the pan a half inch from the edge farthest removed from the metal rod and through it is placed the end of the trigger, bent to an angle of something less than 45 degrees. The trigger is merely a piece of heavy wire, bent as described at one end and with the other, which is straight, projecting toward the front of the trap a distance sufficient to hold up the sliding door at the front when the pan is raised an inch to an inch and a half from the floor. Just before passing under the lower edge of the door, the trigger is supported by being run through a hole bored in an angle iron similar to that which supports the metal rod to which the pan is attached. This is fastened to the wooden cross piece at the top of trap. The trigger's length must be such that when the animal's weight bears the pan's outer edge to the floor it will withdraw the support it affords to the door of the trap, which drops forthwith and prevents the victim's escape. The door, 12 x 12 inches with a metal frame, works in metal-lined grooves contained in two upright pieces of 1 x 2 stuff, 18 inches long, placed 12½ inches apart. These traps should be placed along the outside of the fence enclosing a pen and should always be put back to back, to prevent vermin from attempting to get at the bait from the rear. No trap has proved so effective on game farms as this one. It is good for nearly every kind of vermin that preys on game birds.

Mr. Wallace Evans, proprietor of the largest commercial game farm in the country, at St. Charles, Illinois, who is the inventor of this trap, sells it at $8. In the following letter recently received from him, he makes some interesting observations regarding his invention:

> I invented this trap about ten years ago and have improved it from time to time as experience showed this was necessary. The latest type has a wire cloth pan instead of the sheet iron that was formerly employed. This permits the placing of the bait on the pan instead of hanging it from the rear wall of the trap. Experience has shown that this greatly increases the effectiveness of the trap when used around buildings.
>
> These traps are used principally on the outside of boundary fences, not only for vermin, but for snaring escaped pheasants. When used around fences we usually employ a short guide of wire netting to make more certain the capture of any prowler along the fence. This is the most deadly trap that I have ever seen for the cunning old rats that can not be snared by the methods usually

employed in taking vermin. I assure you that we could not run our farm profitably without them. I have tried all the traps on the market and have found them of very little use for our purposes.

A trap built on the principles of the above, but which is so constructed that live bait may be employed, is sold at $2.50 by the Trappers' Supply Co. of Oak Park, Illinois. Specify skunk trap when ordering unless the smaller size, designed for mink and weasel, is wanted. That size sells for $2.25.

Mr. Rogers employs also the number 1 jump trap, manufactured by the Oneida, N. Y. Novelty Company, which is obtainable at most hardware stores. This is placed a few inches within one end of a box-like runway 30 inches long, 8 inches wide and 6 inches high. The runway is placed next to the fence surrounding the pen and the trap's chain is fastened to the runway to prevent the victim's escape after he is caught. These traps are placed a few paces apart around smaller fields, but this is not possible, of course, where greater areas are concerned. The runway inevitably guides the skulking mink, weasel or whatever the vermin may be to the jaws of the trap as he makes his way about the fence in an effort to find an opening to his prey.

Open steel traps in running water to do away with the scent of the human body are frequently used for foxes and minks. The bait, a piece of meat, is attached to a stick which is placed two or three feet from shore and is long enough to hold it just above the water. Between the bait and the shore place the trap, just beneath the surface of the water and located so that its pan will serve as a stepping stone to the fox for the bait. Cover the pan with leaves or moss so as to provide a dry footing for reynard. An experienced trapper suggests the employment of two traps instead of one in the manner indicated. Tegetmeier tells of a breeder who paints his rearing coops white on the theory that foxes are repelled by the color.

FEATHERED VERMIN.—Hawks, owls, crow blackbirds, crows and blue jays come within this category. The shotgun is a handy exterminator and the open steel trap, unbaited, and placed on poles near the pheasant pens or fields, affording a convenient alighting place for hawks, is usually quite effective. Mr. Rogers fixes sharp spikes, 6 inches long to the tops of all the posts supporting the wire mesh about his fields with an occasional exception and on this a steel trap is placed. The jaws of traps should be wrapped with cloth, as innocent birds are sometimes caught in them. This also minimizes the suffering of the creatures which must be destroyed.

Messrs. Von Lengerke & Detmold of 200 Fifth Avenue, New York City, sell a stuffed great-horned owl, ingeniously constructed so that its head and wings may be caused to move quite naturally by means of strings attached to them and conveyed to a nearby blind which conceals

FIGURE 11-A.—Cooper's hawk decoying to owl.

the operator. The owl is mounted on a pole and the hawk is dispatched by the operator's shotgun when he makes for the owl. This device is graphically pictured in Figures 11 and 11-A. The owl decoys are sold at $25 each and the same house carries a crow call and crow decoy which sell at $1 each.

Wholesale destruction of hawks by means of this device is by no means advocated. The cooper's and sharp-shinned should always be destroyed, but it is to be remembered that many hawks are valuable destroyers of mice and other enemies of the farmer and comparatively innocuous in so far as birds are concerned. It is always possible, of course, for individuals of a harmless species to develop depraved habits, but many breeders are inclined to convict the hawk on insufficient evidence. In the literature issued in connection with the owl decoy mentioned above, it is stated that "many of the hawk species are not as destructive as most people imagine, and such as the red tail, meadow, broad wing and red shoulder, which all come well to the owl, should be spared." The great-horned owl is one of the worst enemies of game birds and it will work great havoc on a game farm unless promptly attended to.

Crows are very destructive. Mr. Dunn attacks them by placing half an egg shell containing raw egg mixed with strychnine just outside the rearing field. One crow caught in this way is likely to rid the place of his fellows for some time to come. A conspicuous object which the wind will keep constantly in motion makes a good scarecrow, but any device must be changed from time to time.

FIGURE 11.—Decoy owl used for combatting destructive species of hawks.

CHAPTER XI

Disease and Its Prevention

The best way to cure disease in pheasants is to prevent it, if one may be allowed a Hibernicism. Once it breaks out on a considerable scale even the most experienced is likely to suffer severe losses, therefore any extended discussion of cures for the various diseases to which pheasants are subject seems hardly worth while.

CAUSES OF DISEASE.—Disease in pheasants most frequently results directly or indirectly from one or the other of the following causes:

1. Errors in feeding—(a) too much; (b) too wet; (c) irregularly.
2. Failure to provide pens of sufficient size—in other words, crowding.
3. Keeping birds too long on the same spot—infected ground.
4. Failure to supply pure, fresh water in *clean* utensils and keep it in the shade. Water exposed to the sun will frequently kill young birds. Damp ground around a water vessel furnishes excellent breeding ground for the germs of many pheasant diseases. Mr. Rogers keeps the plain, open water pans for his young birds 10 or 15 feet from the rearing coop to avoid just this condition.
5. Failure to supply sharp-surfaced grit and charcoal together with green food, such as lettuce, to penned birds.
6. Wet weather.
7. Exposure to diseased domestic fowls.
8. In-breeding, which causes birds to be less resistant to disease.

WHAT TO DO.—Generally speaking, these things should be done when disease appears:

1. Burn the body of the diseased bird.
2. Scald daily drinking vessels and all vessels in which food is mixed.
3. Move coop or pen to fresh ground, quickliming the site on which it formerly rested and spray all coops with disinfectant.
4. Isolate bird as soon as its illness is discovered.
5. Get birds on dry ground if possible. Mr. Dunn uses a removable floor, or "shutter," as it is called, for his rearing coops and this is always employed when the chicks are first put in the rearing field in order to insure a dry footing.
6. Remove from contact with domestic fowl.
7. In extreme cases where the ground is generally infected, feeding may be done on boards.
8. Feed your wet mash dry and crumbly, never sloppy and give as much dry feed as possible.

9. Feed rice, if bowels are loose.
10. Carefully watch droppings of fowl for indications of disease.

Make up your mind at the start that you will be so careful that it will be next to impossible for disease to break out.

Tegetmeier gives a very respectable list of diseases to which pheasants are subject, among them being colds, gapes, roup, tuberculosis, pneumonia, cramp (an affection of the bones of the leg), skin necrosis, fowl enteritis (cholera) and scurfy legs. Birds may also contract lead poisoning through eating shot picked up on ground that has been hunted over.

POWDER TREATMENT FOR GAPES.—Gapes, the very common disease which is easily diagnosed by the "sneezing" of the birds, is, fortunately, rather easy to cure, provided it does not attack very young birds. The so-called sneezing arises from the efforts of the bird to expel from its windpipe the worms (*Syngamus trachealis*) that are lodged there. The treatment is to place the affected birds in a coop, closed fairly tightly, and blow into it with a bellows camlin or blackerite powders, which are to be had at the larger poultry supply houses. The Rogers' type of rearing coop, as previously described, has a hole in the front, a few inches above the slats for the insertion of the nozzle of the bellows. Mr. Rogers uses blackerite, at the rate of a teaspoonful to a coop of fifteen or twenty birds. Mr. Dunn gives three puffs of the bellows to each coop. The birds are kept exposed to the powder approximately three minutes. The coughing caused by the powder results in the discharge of the worms, but the ground on which the coop stood should be quicklimed, as the expelled worms will otherwise infect the soil.

Tegetmeier recommends the employment of the fumes of carbolic acid in treating gapes. A hot brick placed within the coop on which a few drops of acid are dropped will cause a vapor which will bring results, and this is the inexpensive method for the small breeder.

MENACE OF SCALY LEGS.—Scaly or scurfy legs is another ailment that is fairly common and yields readily to treatment. It is contracted by young pheasants usually from foster mothers, as the disease is quite common among domestic fowl. It occurs in the form of crusts that appear on the legs and toes of fowl, caused by the raising of the scales covering this portion of their anatomy by a minute parasite, (*Sarcoptes mutans*), which takes up its abode under them and sets up irritation. The disease is infectious and it is easy to see how the pheasant chicks could get it from their foster mother. Clean-legged fowl only should be used as foster mothers and the legs of these should be carefully examined for evidence of the disease before they are placed on eggs. On the Sherburne, N. Y. Farm, the legs of the adult pheasant breeders are gone over with a brush saturated

with kerosene four times a year, so that it can be seen that scaly leg is a real menace and to be avoided at all hazard. If the disease actually breaks out, coops, nesting places, and so forth should be liberally sprayed with disinfectant and kerosene applied to the legs of infected birds.

Setting hens should also be carefully examined for symptoms of skin necrosis which attacks the mouth and throat and the skin of the abdomen and chest. When the skin is affected, it appears as "thick, dry, greenish-yellow, friable deposits" (Tegetmeier). Burn the body of the infected hen. Treat ground on which she has been with quicklime and do not use it for birds for a year if possible.

The other ailments of pheasants for the most part respond slowly, if at all to treatment and little in the way of medication can be done. Isolation, cleanliness, dry quarters free from draughts and care in feeding are about all that can be done, provided the bird is not destroyed forthwith and its body burned, which is frequently the wisest course to pursue.

The following list of diseases, their symptoms and treatment, is taken for the most part from Tegetmeier:

ROUP.—Cause, micro-organism known as a protozoon, an infectious specific parasite; symptoms, white patches in mouth and pharynx, mouth filled with viscid slime. Treatment, add salicylate to drinking water, a pinch or two; free the mouth from growths and dress affected parts with a strong solution of boric acid. Disease usually curable when only mouth affected. Dress ground of pen heavily with quicklime and turn under after three days. Conkey's roup cure is recommended by some.

CRAMPS.—An affection of the bones of the legs, commencing usually in one and spreading to the other, making locomotion nearly impossible. Usually fatal within three days. No treatment is known but the germ thought to cause the disease probably flourishes in wet ground, so move the birds to high, dry ground as soon as trouble appears and cover the ground with quicklime as in roup. Burn the body of the infected bird.

ENTERITIS.—Severe purging accompanied with yellow evacuations characterizes it. No effective treatment is known. Burn the bodies of infected birds, move non-infected ones to fresh ground and treat the infected soil with quicklime.

Enteritis is sometimes caused by the presence in the intestinal tract of a sporozoon micro-organism. The symptoms are loss of appetite, emaciation, constipation, followed by diarrhoea, the evacuations being "often brick red, more often whitish, then greenish" (Tegetmeier). Greatest mortality occurs in birds from three to six weeks old. Adult pheasants and domestic fowl frequently resist the disease, but the cysts of the parasites, passed out in their droppings, infect the ground and any food that

is thrown on it. The cysts of the parasites live a long time after being deposited on the ground. Isolate infected birds, move others to fresh ground, treat infected soil, scald all food utensils and feed on a board.

The United States Department of Agriculture, in a bulletin by Dr. Morse, prescribes for enteritis a teaspoonful of Epsom salts given in the wet mash for each eight to fifteen chicks, according to size, sulphate of iron in the drinking water at the rate of ten grains to a gallon.

For scours, cholera and enteritis, which seem to be different phases of enteric troubles, castor oil fed in the wet mash is recommended by Mr. Dunn; a teacupful to a water bucket of mash, given every other day.

There is a diversity of opinion as to whether the foam-like substance not infrequently encountered in rearing fields, and known as "cuckoo spittle" is injurious to young birds. There are many well authenticated instances in which birds have died, apparently from eating it, but some breeders think it is seldom the primary cause of death. It occurs on poor soil and birds having access to it are therefore not likely to be in first class condition. Perfectly healthy birds are frequently reared in fields in which it abounds. These facts indicate that the spittle is not harmful to well-nourished birds. In affected birds the spittle forms a jelly-like mass in the crop. Relief is afforded by pressing this mass out with the fingers. It is the purpose of the American Game Protective Association to experiment to determine how far the spittle may be considered injurious. I am indebted to Dr. L. O. Howard, chief of the Bureau of Entomology of the United States Department of Agriculture for the following description of the insect which secretes the spittle:

> "The so-called frog-hoppers, or spittle insects, are of the family Cercopidae. They are small, slender, brown or clay-yellow or grayish insects, and after hatching from the egg live in little masses of froth resembling spittle, on the stems of plants, frequently on grasses and weeds. The eggs are laid in the stems in the autumn and hatch in the spring. The spittle is secreted as a clear liquid, and air bubbles are brought into it by constant threshing about of the anal end of the body, the air being retained as bubbles by the viscid quality of the liquid. It is supposed that the purpose of the frothy mass is to protect the soft-bodied, immature insects from their natural enemies; in other words that it is a disguise, but it renders them very conspicuous, and once their true nature is ascertained they are all the more easily found by their enemies, and as a matter of fact they are sought for by certain wasps which drag them out of their froth and carry them off to provision their nests. So far as I know, there is no evidence that either game or domestic fowls are injured by eating these insects or their secretion."

CHAPTER XII

Distribution of the Pheasants of the United States

We have already noted the fact that the pheasant commonly found in the eastern United States is the ringneck, a hybrid sprung from the common pheasant, *Phasianus colchicus*, and the Chinese pheasant, *Phasianus torquatus*, and that that of the Pacific Coast is the pure Chinese, (*Phasianus torquatus*). The following rule for distinguishing the common, the Chinese and their hybrid, the ringneck, has been given me by Mr. C. William Beebe, curator of ornithology of the New York City Zoological Park, the first volume of whose monumental work on the pheasants of the world has recently been announced:

HOW TO DISTINGUISH "COMMON," "CHINESE" AND "RINGNECK."—If the loose, hair-like, disintegrated, feathers which cover the lower back and rump are:

1. *Pure maroon*, the bird is a pure-bred "common" pheasant (*Phasianus colchicus*), a bird that is rarely seen in England today, so generally has it been crossed with the Chinese pheasant (*Phasianus torquatus*).

2. If *pure green*, the bird is a pure-bred Chinese pheasant (*Phasianus torquatus*).

3. If *mottled*, or a *blend of maroon and green*, the bird is a ringneck, the pheasant commonly found in England and Eastern United States and which is a cross between *colchicus* and *torquatus*, with sometimes, in Great Britain, an admixture of the blood of the Japanese pheasant (*Phasianus versicolor*).

SPECIES COMMONLY BRED.—Species of pheasants other than ringnecks which are more or less commonly bred by the large commercial breeders are the Reeves, Mongolian, Japanese (versicolor), Prince of Wales, golden, silver and Amherst. Most of the Pacific Coast breeders breed the pure Chinese rather than the ringneck, in addition to the species just mentioned. Of the latter the four first mentioned belong to the genus *Phasianus*, whose members are known as true pheasants, and they are all more or less of the type of bird adapted to the coverts of this country. The remaining species of the list are commonly referred to as aviary birds and, generally speaking, are not adapted to such cover as is typical of the United States. For that reason, these are seldom liberated but drag out what must be a rather miserable existence in an aviary. There are to be had of a few breeders, of course, other and rarer species of aviary pheasants, but such have no place in a work of this nature.

CROSSING TO IMPROVE QUALITY.—So far, the ringneck and Chinese are the only birds really established in the wild state in this country, so far as I am able to determine, the former being characteristic of the eastern United States and the latter of the far West. The other species, however, are not to be dismissed summarily, and there is evidence accumulating of increasing experimentation in the crossing of the ringneck and Chinese with some of their near relatives with the idea of improving the qualities of these birds both from a sporting and an edible standpoint.

Letters requesting detailed information, which were recently addressed to various states and individuals which had reported to the American Game Protective Association the breeding of species other than Chinese or ringnecks, elicited interesting replies. Two of these that are typical are given herewith:

Dr. George W. Field, Chairman, Commissioners on Fisheries and Game, Massachusetts:

> We have been breeding, in a small way, at the state farms Mongolians, versicolors, Reeves and golden pheasants in addition to ringnecks to determine whether by any chance these birds are more suitable than the ringnecks from their feeding and breeding habits, and hardihood. They are each of them distinctly more difficult to raise than the ringnecks, and the few we have are only for popular interest. We have not succeeded in breeding them in sufficient numbers to warrant liberation, although the first crosses and partial bloods have been liberated. This refers to crosses of ringnecks with Mongolians and versicolor. We have no intention of interbreeding hybrids or attempting to establish any subspecies but merely to get a breed which is a little more gamey than the ringneck.

Henry Rief, Esq., Superintendent, King County Game Farm, Seattle, Washington, writes:

> The main object I have in breeding Prince of Wales into Chinese pheasants is to overcome a fault.
>
> The fault is, first, that our birds are becoming smaller each year which is, I believe, caused through inbreeding. What first called my attention to this was that in raising from one to three thousand we would have one out of about fifty white. This lead me to believe that the stock we had was inbred.
>
> I found after crossing my birds with the Prince of Wales and Mongolian strains that this stopped and that the size of the birds increased. While it is true that the Mongolian is a smaller bird than the Chinese, he is of a cleaner strain, or rather the ones that I have exhibit these qualities.

I have about seventy-five male birds that are crossed with either the Prince of Wales or Mongolian; birds secured from various breeders in Oregon. These same birds last year showed great signs of degeneration. Many of them were hatched with crippled legs and deformed in other ways. In many cases they were extremely weak. Since I have crossed with the Prince of Wales, using the male of that species and the Chinese hen, we have experienced less of this trouble. It could probably be eradicated by bringing in new stock from the Orient, but owing to the pressure of business, and further because I had a number of Prince of Wales cocks on hand, I made the experiment and I find that the birds resulting are a great deal hardier. This applies to the Mongolian cross as well. I had no particular object in doing this further than to add strength to the birds that we were turning out.

I have placed an order with a firm in Yokohama for a number of thoroughbred Chinese male birds and should I be successful in landing them, I will cross them with some of the females that I now have.

You probably know that of the Chinese birds first brought to the Pacific Coast by Judge O. N. Denny, the majority were liberated in Oregon. Some, however, were placed on Protection Island, in Puget Sound. No further consideration was given these birds till some years later when a few sportsmen began shooting them. There followed their propagation in captivity in Oregon and after a time the bird became known in Washington and several people in this state began to raise it. Some of our stock was imported from Oregon, presumably descendants of the original birds imported by Judge Denny, and some has been brought in from other parts of the United States. Also, a great many birds appear to have been imported from the Orient. Whether they were pure Chinese stock I cannot say, but in summing it all up, it appears to me that 99 out of every 100 birds in western United States originated from the birds imported by Judge Denny.

Some time ago I saw birds on board the S. S. Minnesota which were bought from Laffan & Co., Yokohama. The plumage was somewhat disfigured on account of being in cold storage, but the bird was a great deal heavier than ours. I also noticed that the breast was more compact than that of our birds.

Mr. Rief's reference to the Mongolian as a smaller bird than the Chinese is puzzling, as he is commonly recognized as being much larger than either the Chinese or the ringneck.

TABLE OF PHEASANT CROSSES.—As will have been gathered from what has been written above, many species or sub-species of pheasants may be crossed and, in a good many instances, the resulting progeny will be fertile. Some species will also cross with domestic fowl. The following table of crosses is taken from "Pheasant Keeping For Amateurs," by George Horne, an English publication:

CROSSES	EGGS
Gold and ringneck	Fertile
Silver and domestic fowl	Fertile
Amherst and Gold	Fertile
Reeves and ringneck	Fertile
Elliot and common	Unfertile
Soemmerring and common	Unfertile
Versicolor and Gold	Unfertile

PHEASANT AND DOMESTIC FOWL.—Mr. Charles A. Sykes of Dutchess County, New York, is authority for the statement that a cross between the ringneck and domestic fowl gives a bird of surpassing qualities for eating purposes. The hybrid is infertile. The following account of a cross with domestic fowl is taken from the BULLETIN of the American Game Protective Association of July 15, 1915:

> Every now and then stories are heard in game breeding circles of crosses between pheasants and domestic fowls. Some of these are well authenticated. Mr. H. M. Brigham, of New York City, has brought to the attention of the BULLETIN an instance that occurred on the preserves of the Clove Valley Rod and Gun Club in Dutchess County, New York, a few years ago. The male bird was a cock ringneck pheasant and the female a small bantam hen. The color of the offspring was nearly an exact reproduction of the color of the plumage on the body of the cock pheasant under the wing. In size the bird was considerably larger than either of its parents. Its most striking characteristic was its carriage, which strongly resembled that of a game cock, the head being held very high. The bird was rather strong in flight.

A brief consideration of some of the species used in crossing or which are bred pure will enable any reader who may wish to experiment in this line to do so with some appreciation of the distinguishing characteristics of the various species:

CHINESE.—This species, the pheasant commonly found in the Pacific Coast, is a rarity in the East. Smaller than the hybrid ringneck, he is esteemed by many a far better game bird and more toothsome also. One of his strongest admirers is Superintendent Rogers of the New York

State Game Farms, who says he finds him excellent for renewing the blood of his strain and, as a sporting bird, quick to rise to a dog, seldom running along the ground, and a swift flyer.

Mr. C. William Beebe, states that he has shot pheasants within two miles of Shanghai without the white ring on the neck, apparently demonstrating the fact that the Chinese pheasant does not always breed true to type. In fact, Mr. Beebe states that there is great irregularity. He is of the opinion that the large majority of the pheasants of the Pacific Coast country have no blood of the common pheasant, *Phasianus colchicus*, in them, as practically all our eastern birds have. Mr. Rogers, on the other hand, states that in his observation pure-bred Chinese birds breed in this country unusually true to type, when reared in captivity. He prefers the pure Chinese to the ringneck, esteeming it a keener, hardier bird.

OREGON PREFERS CHINESE.—I am indebted to Mr. William L. Finley, state biologist of Oregon, for the following:

> In regard to your question concerning the pheasants in Oregon, I will say that the wild birds are pure-bred Chinese, *Phasianus torquatus*. I have seen a great many of the birds killed in the wild state and the stock is pure. Of course, we have quite a number of people who purchase pheasants, and some of these have procured Mongolian or English ringneck stock, but as far as I know, none of these has been liberated anywhere in Western Oregon.
>
> From the experience I have had, I believe the pure Chinese, *Phasianus torquatus*, is a better game bird than any of the others. In talking with some of the eastern dealers, I have had them claim that their birds were larger and better. In fact, one of them told me that he thought the Oregon pheasants were not as good stock because they are smaller and run mostly to legs. This was either because he had different stock for sale or he did not know this bird in the wild state. I take it that the main point in a good game bird is one that can take good care of itself in the wild state, and reproduce itself in sufficient quantity to give hunters something to shoot at. If you could observe our pheasants in Oregon travel up and down the Williamette Valley, you would see that this bird is a success from the sportsman's standpoint and in every other way.

In reproducing the above I have taken the liberty in several instances of changing the term "ringneck" to "Chinese," as for the purposes of this book we have determined upon the latter as the designation of the pure-bred bird of Chinese ancestry, *Phasianus torquatus*.

Mr. L. H. Darwin, state game warden, writes from Seattle:

> I beg to advise you that the Chinese pheasant (*Phasianus torquatus*) is the one which is found in the State of Washington. These birds are imported direct from China, thrive beautifully on this coast, and have never been observed to cross with any of the other species, although other species are to be found in this state, having, likewise, been imported.
>
> We have several pheasantries in this state and in Oregon, which are engaged in the work of propagating this species, but the protection afforded them by the law has served to give us a stock that does not need further replenishing by importation.
>
> Our observations are that, in many portions of this State, Hungarian pheasants have reproduced in the wild state, and to a lesser degree, possibly, the Japanese, (*versicolor*) and silvers.

RENEWING BLOOD FROM EGGS OF WILD BIRDS.—Mr. William H. Dirks, superintendent of the California State Game Farm, writes that "the Chinese pheasant (*Phasianus torquatus*) is the bird we are rearing and liberating in California. We do not know, with any degree of certainty, of any other species that has been established on the coast.

"Our method of renewing our blood has been through exchange with private breeders, but last spring a year ago, we received 13 eggs from a nest of 17 that had been destroyed by a mowing machine in Santa Clara County. Our Deputy Koppel obtained these eggs about noon, placed them in a box full of sawdust, containing a hot water bag, and shipped them to us. We received the eggs at 5 p. m. and placed them in an incubator. They hatched two days later (April 24). We reared 11 birds, 10 hens and 1 cock. The hens were penned up with one of our best cocks, and the cock with 10 of our hens. From the offspring of these birds, we have selected 55 birds to be bred back to the birds of our original stock."

Most game farms make a practice of trapping wild birds for breeders and this undoubtedly accounts in part for the years of unbroken success that Superintendent Rogers of New York has had. In New York it is unlawful to shoot pheasants within any of the territory immediately surrounding the farm. In England some breeders place their breeding hens in open pens so located that wild cocks may have access to them. There are conflicting reports as to the efficacy of this method. On other estates abroad no pheasants are kept in confinement and breeding is done from eggs gathered from the nests of wild birds and placed under domestic hens. While, I believe, the matter is not specifically covered in the New York Conservation Law, I assume that such practice would be lawful in that state provided the nests from which the eggs were taken were located on

a "wholly enclosed preserve or entire island" owned or leased by the person for whose benefit they were taken and provided also that that person had a breeder's license. In any event, however, in any state it would be wise first to obtain the consent of the authorities before resorting to such a practice.

Warden J. L. DeHart writes: "only ringneck [Chinese?] pheasants have ever been liberated in Montana, and these in a limited territory on the Marcus Daly ranch in the Bitter Root valley. There they have thrived and exist in considerable quantities at the present time. No other species, to my knowledge, has ever been liberated in this state."

RINGNECK STATES OF THE EAST.—While it is the pure Chinese that is under discussion at the moment, it seems proper to call attention to the fact that the ringneck is the only species of pheasant found in the wild in the East. Massachusetts and New York are the great pheasant states of that section, and these birds are found to some extent in practically all the eastern states north of the Carolinas. The few attempts that have been made to introduce ringnecks in the far South have apparently proved unsuccessful, though an interesting experiment along this line is now being carried on by Mr. William duPont on a large preserve in southern Georgia. Writing of this some months since, Mr. duPont had this to say:

> "The ringneck pheasants turned out on my preserve in southern Georgia have done well. They have not been there, however, long enough for us to determine definitely whether they will breed in a satisfactory manner in the wild state.
>
> "The only losses that the writer knows of is one that was accidentally shot and some eight or ten that wandered off to adjacent properties. Two of these were shot. All of the birds killed were in the very pink of condition, showing that their new home in the South agreed with them well. This loss is comparatively small out of about two hundred and twenty-five birds turned out."

PHEASANTS IN THE MIDDLE WEST.—It is difficult to obtain definite information as to the status of the pheasant in this section of the country. The ringneck undoubtedly occurs in the wild in many of the states it comprises but in none, I believe, to the extent it is found in certain of the far-eastern and far-western commonwealths. Ohio, Iowa, Oklahoma, Kansas and Kentucky are all states that have stocked ringnecks on a considerable scale in recent years. The largest commercial breeder of pheasants in the country is in Illinois, and there are successful commercial pheasantries in Michigan and Indiana.

In the chapter that follows, consideration will be given pheasants other than the ringneck and Chinese, which are bred in this country.

CHAPTER XIII

Pheasants Other than Chinese and Ringneck

Probably the Reeves, Mongolian and versicolor are, among the true pheasants, the species most generally bred in the United States, though none has as yet been established in the wild over any appreciable area and all three are used at the present mainly for crossing purposes. These will be considered in the order named:

REEVES.—This species is being bred on the state farms of Oregon, Connecticut, and Massachusetts. Activities in this connection on the Oregon farm have assumed considerable proportions, as will appear from the interesting letter from Mr. William L. Finley, given herewith:

> More than four years ago when I took the position of state game warden, I found that my predecessor had entered into contract with Mr. 'Gene Simpson to purchase 100 pairs of Reeves pheasants for $1500 to liberate in different sections of the state. The previous year quite a number of these birds were liberated and we had fairly good reports of their breeding in the wild state. When we took over Mr. Simpson's stock we purchased about one hundred Reeves in addition. From that time on we have been raising and liberating about two or three hundred of these birds in certain sections of the state each season. We know of specific instances in which they have bred in the wild state. As a rule, they have scattered quite a little from the places where they were liberated. When set free in the valley, they seemed to seek the hilly land. For instance, some that were liberated in Lane County near Eugene were found some forty or fifty miles up the river. A pair bred on a farm above Oak Ridge, and a flock of seven of these birds was seen during the past season.
>
> The trouble is the Reeves is not nearly as prolific as the Chinese pheasant. We do not get more than an average of fifteen to twenty eggs from the former, while forty to eighty eggs are laid by the Chinese hen. The birds are more difficult to raise, also, although Mr. Simpson uses practically the same methods with the Reeves as with the ringnecks (Chinese). They are reared side by side and sometimes in adjoining coops in the same enclosure.
>
> I do not know yet whether we shall continue breeding these birds indefinitely or not. They are not really successful as a game bird, but it is a beautiful sight to see them in the fields and woods.

Mr. Rogers found in handling the Reeves that they did not lay till they were two years old and that the hen could be counted on for only 8 to 13 eggs a season. He characterizes the species as being shy and of a bad disposition.

So far as I can learn, the activities described by Mr. Finley constitute the most ambitious efforts made in any state so far to introduce any species of pheasant other than the ringneck and Chinese. (In England the Reeves has been well established for a number of years.) This bird is not found in the wild state in the eastern part of this country, so far as I am aware.

The Reeves has the longest tail of any of the true pheasants, exceeding six feet in some individuals and is easily distinguished by that feature. Its home is in northern China. The bird is excellent for the table, of large size and of surpassing swiftness in flight. As a sporting bird, however, it seems to do better in wild, broken, hill country, where its flight must necessarily be high and varied. In low lying covers it is said to be hard to get up and to fly low when it does arise. This species is said to be an even greater wanderer than the ringneck, and that, of course, counts against it as a bird for stocking coverts.

Crosses of Reeves and ringnecks are more or less common, but it is supposed that the hybrid is infertile.

MONGOLIAN.—To this day, the ringneck is not infrequently referred to in this country as the "Mongolian pheasant," a curious error which apparently arose with the introduction of the former bird to this country. As we have already learned, the ringneck, the pheasant most commonly found in this country and England, is a cross between the Chinese pheasant (*Phasianus torquatus*) and the common pheasant (*Phasianus colchicus*), whereas the Mongolian is an entirely different bird as its scientific designation, *Phasianus mongolicus* shows.

Silver pheasant cock, New Jersey State Game Farm.

The home of the Mongolian is in Northern China. It is, therefore, inured to low temperatures, but is said not to do so well in warm climates. It is larger than the ringneck and a writer in the *London Field* of

January 16, 1909 states that these birds "rise freely to the beaters, and fly boldly, very fast and high." Mr. Harry T. Rogers informs me, however, that he considers the bird rather sluggish and that he does not see much to be gained from a sporting standpoint in crossing the Mongolian with the ringneck.

The Mongolian is not to be found in the wild in any part of the United States, so far as I am informed, but the State of Massachusetts reported in the BULLETIN of the American Game Protective Association of July 15, 1915 as follows regarding breeding activities in that species:

	Eggs set to June 20	Hatched to June 20	Still incubating
Mongolian pheasant	90	40	50
Mongolian pheasant cross	68	27	41
Mongolian (Evans stock)	82	26	56

In the same issue, the State of Connecticut reported that it was breeding Mongolians, but gave no statistics.

Mr. A. G. MacVicar, head game keeper at the Childs-Walcott preserve in northern Connecticut, thinks well of the Mongolian, as will be seen from his letter, recently received:

> The Mongolian cocks we bred from this season were reared in this state from imported stock. Crossed with the ringneck hens, we got a larger and more vigorous progeny. This is true of nearly all crosses, as, for instance, versicolor, Prince of Wales, Hagenbeck, etc., with ringneck hens. Some of the hardiest and best birds I have seen in this country, however, were pure Chinese (*Phasianus torquatus*) from Oregon. The fertility of our eggs this season was below the average, I suppose on account of the cold wet season.
>
> We did not get any eggs here till late in April. (We had 14 inches of snow still on the ground April 7.) So you can see that we can scarcely expect as many or as fertile eggs here at this altitude, as, say, Mr. Dunn could count on at Forked River. Birds reared here, however, should make very good breeders, hardy and prolific.

Mr. Neil Clark is another experienced and highly successful breeder who fancies the Mongolian. He writes me from the Clove Valley Rod and Gun Club, in Dutchess County, New York, as follows:

> We imported from M. Dwight, Berkhamsted, Herts, England, forty-six Mongolian cock pheasants. We did not get them until the middle of February and they were in very poor shape, having been more than two weeks on the way. I did not use them for breeders this year but I intend to next. The Mongolian cross is a larger bird than the ringneck, is just as good for sport and is very hardy. I think they cost about $10 a pair. If you will pay us a

Pen of young golden cocks and hens, New Jersey State Game Farm.

visit I will show you our Mongolian cocks, and I think you will say they beat the ringneck.

Mr. Ralph H. Sidway writes me as follows concerning the Mongolians he is using on his estate near Buffalo:

> I imported Mongolians this year because they are larger, finer birds and wilder than ringnecks. I think they will make better birds to stock the covers with. I bought these birds in England after you were down at our farm and they arrived rather late for this year, but we had fair luck raising them and hope next year to raise a great many. I intend to breed them pure. The only individuals we will cross will be the wild birds. All else will be pure blood. There are quite a few wild ringnecks around our land now and they will mix up with the Mongolians, but I hope eventually to breed all pure Mongolians.

VERSICOLOR.—Of the representative and widely scattered number of breeders of game included in the American Game Protective Association's 1915 census but one mentions the versicolor, or Japanese pheasant. The sole exception is the State of Massachusetts, which is merely experimenting with it on a small scale. Yet the versicolor is one of the keenest and most attractive of the true pheasants and it occurs in the wild in large numbers in Great Britain. In that country it has freely interbred with the common and Chinese pheasants, the mixed progeny being fertile, and, according to Tegetmeier, "the effect of this introduction of foreign blood into English coverts has been amazing, producing an increase in size and vigor, and beautiful variations in the plumage, dependent on the species whose blood predominates in the cross."

PRINCE OF WALES.—While this species can be obtained of the larger dealers in this country, I know of only one place in which it is being produced in any numbers and that is on the farm of the King County Game Commission, near Seattle, Washington, as appears from the letter of Mr. H. Rief, reproduced in the chapter immediately preceding. This pheasant is a native of Afghanistan and spends much time in dense undergrowths in marshes, though it feeds in more open and drier country morning and evening. It would be interesting to see experiments conducted with this bird in country as nearly resembling that in which it is found in Afghanistan as possible.

THE GOLDEN PHEASANT—We pass now from the so-called true pheasants, the species included in the genus *Phasianus*, all of which interbreed and produce fertile offspring, to the genus *Thaumalea* and the birds which are more frequently found in the aviary than the covert, beyond the boundaries of the land of their origin. The golden pheasant is usually regarded as one of the easiest of all the species to breed, many considering it a hardier bird than the ringneck. It is certainly one of the most beautiful of all the pheasants, its silken crest and broad tippet, characteristics of the genus to which it belong, giving it a distinction all its own. The golden is known to inhabit the mountainous country in the western central part of China.

Twenty-five eggs is a good average for the golden hen in a season. The young take to roosting very early and, despite his gorgeous plumage, the adult cock is by no means so easily marked in the wild as might be expected. Young cocks do not come into full plumage till after the middle of the second summer. Goldens are occasionally shot in various parts of the country but in no instance have they become really established. They are shy birds and are said in the wild to be disposed to make way for more assertive species.

Amherst pheasant cock, New Jersey State Game Farm.

Dr. G. Howard Davison, the well-known authority on American agriculture, informs me that he will probably breed and liberate a few goldens next year on his place near Millbrook, Dutchess County, New

York. The birds will be thrown with the ringnecks which Dr. Davison has for years bred and liberated with excellent results, and it will be interesting to note how the two species agree in the wild state.

Goldens are bred by most of the commercial breeders and a good many state farms also rear them.

THE AMHERST PHEASANT.—This is one of the most beautiful of all the pheasants and, with the golden, completes the highly restricted genus, *Thaumalea*. The two interbreed freely and their progeny is fertile. The cross exceeds either parent in beauty of plumage. It is interesting to note that the Amherst prefers rocky, unwooded places covered with bramble and briar, and that it is accustomed to considerable extremes of heat and cold in its native Thibet. There are parts of our western country in which this species might do well. In captivity it is best to afford it the maximum of cover.

THE SILVER PHEASANT.—We come now to the last of the species to be considered and, incidentally, arrive at a new genus, *Euplocamus*. In the opinion of Mr. Beebe, this pheasant is probably the most numerous species in the United States, the ringneck and Chinese excepted. These birds are so vicious, however, and are so hard to get off the ground that they are not worthy of much consideration, though they are undoubtedly of beautiful plumage. The cocks will attack anything that is feathered and not infrequently go for the keeper when he enters their pen. Of course, they are not much of a menace, but a cock might do serious injury to a child. Mr. Beebe informs me that Mr. William L. Finley has written him that silvers occur in the wild state in considerable numbers in Oregon. I know of no place in the East in which they can be found in the wild in any numbers.

When the silver can be induced to get up its flight is low, making dangerous shooting. It comes from the wooded hills of southern China and has long been known in this country and Europe. Its flesh is not regarded highly and, altogether, outside the aviary, where it is quite attractive, it is not a desirable bird.

CHAPTER XIV

Breeding of Pheasants other than the Ringneck and Chinese

With such species as the Mongolian, versicolor and Reeves, the methods employed in breeding differ in no respect from those used with the ringneck. Even in the case of the fancier species, the more or less typically aviary birds, there is small difference. In the case of the latter it is probably best to rear them by themselves and the adults are usually confined in a combination coop and covered run of the type shown in Figure 12, which is from a photograph taken at the New Jersey State Game Farm.

DESCRIPTION OF COOP.—The coop is 5 feet wide, 6 feet deep and 5 feet high, the roof, which slants two ways, rising at its greatest elevation to a height of 6 feet 4 inches. Two doors, 2 feet wide and 3 feet 8 inches long, are placed front and rear. They are hinged at the top and open upward, being supported by a stake driven in the ground when they are open. It is often desirable to move the pen without moving the heavy coop and the provision of a door at both the front and rear makes this possible. The pen should be moved every month or two and, when this is done, a fresh layer of gravel should be spread over the bottom of the coop. The latter should be moved at least once a year.

Above the front door there is a ventilation aperture 4 feet long x 1 foot wide, covered with wire cloth. The framing used is 2 x 3 stuff to which is nailed ⅞-inch tongue and groove boards. The roof is composed of 10-inch boards covered with roofing paper. A round roost, 2 inches in diameter and 16 inches from the ground is placed across the center of the coop so that long-tailed species will not injure their plumes.

Figure 12.—Type of pen and coop used for confining adult fancy pheasants.

On one side of the coop there is a door for the use of

the keeper, 4 feet 3 inches high and 22½ inches wide. The roof measures 3 feet 9 inches from the apex to the lower edge on either side of the slope.

CONSTRUCTION OF THE PEN.—The pen which goes in front of the coop is 10 feet wide, 12 feet deep and 5 feet high. It is constructed of 2 x 2 material, covered, sides and top, with 1-inch mesh poultry netting. All corners are braced and the two sides are strengthened with a central strip, attached vertically. Roofing paper 3 feet wide is placed about the pen to minimize alarming the birds. The top edge of this is nailed to strips of 2 x 2 which act, also, as a horizontal brace.

The pen is provided with a door in front, 4 feet high x 20 inches wide. Opposite it at the rear is an aperture 5 feet high x 5 feet wide, which furnishes an opening for the coop door. Across the center is placed a roost, composed of a piece of 2 x 2 with the edges rounded.

Mr. Duncan Dunn, superintendent of the New Jersey farm, suggests that the coop might be done away with entirely, and its place taken by a simple shelter, open along its entire front, and placed across the rear of the pen itself. Such an arrangement would lessen construction cost considerably and also the labor of moving, as well as permit the placing of the coop itself on fresh ground at more frequent intervals.

Bantams are more frequently employed in rearing aviary pheasants than with the other species, Mr. Dunn using the buff cochin. Light hens of the ordinary breeds may be employed if bantams are not available. From 12 to 15 eggs are placed under the bantam, according to size. Feeding and handling after hatching do not differ in any important particular from the methods employed with the ringneck, but it is probably best to keep the species separate, as some are more pugnacious than others, the Amherst being rather notable for its fighting proclivities. It gets the lion's share of the feed when confined with other young birds.

ONE COCK TO THREE OR FOUR HENS.—This is the rule usually followed and with the rarer birds, where it is not always possible to provide so many hens of the same species, ringneck or even game hens are used to make up the deficiency. Too few hens mean poor hatches and the cock not infrequently injures them seriously.

CHAPTER XV

Marketing the Pheasant

The demand for ringnecks for breeding purposes is considerably greater than the supply. This, coupled with the fact that breeders bring higher prices than birds sold for table purposes, is responsible for the fact that few birds reared in this country find their way to the market, that portion of the demand being met almost exclusively with pheasants imported in cold storage from Great Britain. Two things, however, are likely in the future so to increase the breeding of pheasants in this country that eventually they will come upon the market as a part of the nation's game food:

1. When the farmer's wife awakens to the fact that a few ringnecks reared each year will produce more pin money than chickens, guineas or turkeys, with hardly any more trouble involved in bringing them to maturity, she will forsake the other fowls or at least add ringnecks to her list.

2. Sportsmen are learning rapidly that a great deal of sport can be had in ringneck shooting at small expense through the example that is being set by such organizations as the Clove Valley Rod and Gun Club, as explained in a later chapter. The next few years are likely to see pheasant shooting clubs spring up all over the country and, with their increase, more birds will be available to meet the demand that imported stock now supplies.

PRICES OF BREEDING STOCK.—Following is this fall's price list (1915) of a well known and responsible dealer, the figures given being well in line with prices asked by other breeders of good quality stock:

	Eggs, Dozen	Birds, Pair
Ringnecks (cocks and hens)		$ 6.00
Blue Neck	$ 3.00	6.00
Silver	5.00	10.00
Golden	6.00	10.00
Versicolor	12.00	15.00
Reeves	12.00	20.00
Lady Amherst	12.00	20.00
Swinhoe	18.00	30.00
Mongolian	10.00	10.00
Manchurian	60.00	75.00
Impeyan	80.00	100.00
Peacock	70.00	60.00
Prince of Wales	10.00	12.00
Elliot's	20.00	40.00

The same list quoted ringneck eggs for the 1915 season as follows:

April	$3.00 Dozen,	$20.00 per 100
May	3.00 Dozen,	20.00 per 100
June	3.00 Dozen,	16.00 per 100
July	2.50 Dozen,	14.00 per 100

Another responsible dealer early in the fall quoted ringnecks at $5 a pair, birds purchased separately being priced at $3 each for hens, and $2.50 for cocks. At this writing, early November, the market seems pretty well cleaned up and dealers are asking $6 to $7 the pair for ringnecks. There really seem to be few birds to be had at any price.

HOW TO SHIP LIVE BIRDS.—Birds wanted for breeding stock are usually purchased in the fall or early spring, the first named season being by all odds the best time in which to lay in stock. In my opinion the best method of shipping live birds a comparatively short distance is that adopted by Mr. Rogers for the New York State Game Farms. A large grape basket is the receptacle used. See illustration, Figure 13. These are made in two sizes, the first holding four to six birds two to three months old and the second only a pair. They are known respectively as the one-bushel Climax and twenty-pound Climax. They have been sold in the past at 11½ and 5 cents each by the Oxford Basket & Manufacturing Company, Oxford, Chenango County, New York. In preparing the basket for shipment, cut the ventilation holes shown in the illustration with a stencil, cover the bottom with two inches of coarse shavings and quarter three or four apples or turnips as a substitute for water during the trip. Place a few handsful of grain in the basket also. Unless the birds are to be used for shooting, one wing should be clipped. Many a bird is lost otherwise when the basket is opened by an inexperienced consignee. Paste the address label on the top of the basket immediately under the handle to avoid its being rubbed off.

The crate shown in Figure 14 is that used by a British importer and illustrates the type best adapted to long shipments. It is 4 feet long, 2 feet wide and 14 inches high. A double bottom is provided for removing the droppings, with a space of 1¼ inches between the upper and lower levels. A space of ¼ of an inch is left between the boards composing the upper

FIGURE 13.—Type of grape basket used for shipping live pheasants.

bottom so that the droppings may fall through to the lower. There is a partition which bisects the interior and in each of the two compartments thus created four or five adult birds can be placed. A food and water tray with four compartments slides into the front of the coop and is held in place with a metal button screwed just above the opening into which the tray slides. Each compartment is 6 inches long, 2½ inches wide and 3 inches deep. The interior is tarred so that it will hold water.

The top of the crate is covered with burlap. Mr. Neil Clark suggests that this is somewhat insecure and thinks that it should be surmounted with a board cover, placed 2 inches above it, the intervening space being filled with fine hay, to prevent scalping. A German house uses a coop for import purposes which has at one end a stationary food chopper and drinking fountain, which is even better than the above. I regret that I am unable to get hold of a specimen for description.

LABELING AND TAGGING.—Under the New York law, pheasants reared in that state under authority of a breeder's license on a wholly enclosed preserve or entire island owned or leased by the breeder may be disposed of at any time and in any manner. The container in which pheasant carcasses are shipped, under the New York law, must be labeled with a card containing the names of

(a) the person under whose license they were killed,
(b) the consignee,
(c) the game protector by whom they were tagged, and
(d) the number of carcasses contained therein.

In addition, the carcass of each pheasant must be tagged in the presence of some representative of the Conservation Commission (usually the local game warden). These tags are sent on application to the Commission and cost 5 cents each. In times past considerable complaint has arisen over the time that has frequently elapsed between the making of application and the arrival of the Commission's supervisor of tagging, though, with its limited resources, the Commission has probably done the best it could. The license to breed gives authority to ship pheasants alive for breeding or stocking purposes at any time, and none of the tagging and labeling required when dead birds are shipped, as described immediately above, is demanded in that case.

FIGURE 14.—Crate for shipping pheasants long distances.

CONNECTICUT AND NEW JERSEY PROVISIONS.—Laws of New Jersey and Connecticut on the shipment and tagging of game are the same as those of New York with the exception that Connecticut requires the tagging of live as well as dead pheasants and New Jersey forbids the shipment of live birds outside the state until they have first been offered to the Board of Fish and Game Commissioners "at a reasonable price." Connecticut makes no charge for her tags.

New York forbids the bringing in from other states of pheasants unless intended for breeding or stocking purposes, as explained in the introductory chapter. Neither Connecticut nor New Jersey follow her in this inhibition.

BREEDERS MUST REPORT.—It is provided under the New York law that on or before April 15 of each year, each person to whom a breeder's license is issued shall make a report to the Conservation Commission covering the period from October 1 to March 1 preceding, and stating the total number of pheasants killed, sold or transported and in addition the name of the consignee if any game has been shipped during the period and the name of the game protector by whom the birds were tagged. It is further required that such report shall be verified by the affidavit of the person holding the license, or if the license has been issued to a corporation, by an officer thereof.

Connecticut requires reports on birds sold or transported during the first week of January, April, July and October, but does not demand an affidavit.

New Jersey requires a yearly report on or before January 15 on pheasants killed, sold or transported the preceding year and follows New York in requiring an affidavit.

THE LIVE PHEASANT MARKET.—The demand for live pheasants comes principally from

1. Established breeders seeking new blood.
2. The large numbers of people who are taking up pheasant breeding each year in this country.
3. Clubs and individuals who wish birds for fall shooting.

Breeders having stock for sale will do well to advertise it in some approved medium and also to list it, giving numbers, sex and price asked, with the director of the Department of Game Breeding, American Game Protective Association, 2273 Woolworth Building, New York City. No charge will be made by the department. Those in request of breeding stock should also notify it of their wants, and it will thus serve as a convenient medium for bringing buyer and seller together.

PATRONIZE RELIABLE DEALERS.—In purchasing birds too much emphasis cannot be laid on patronizing reliable breeders, even

though their prices may be considerably higher. An experienced breeder wrote me recently as follows regarding an imposition of which he had been the victim:

> The novice in many cases is misled by the person who sells him the birds and is led to believe that he is buying pure stock when the facts are otherwise. For example, two years ago I became interested in the Prince of Wales pheasant and corresponded with a dealer who claimed to have thoroughbred birds. The result was that I parted with $35 of my hard-earned money and received three birds, very scrawny looking. When they arrived the male had no tail and the hens looked dumpy. After taking them to my place and supplying them with good coops, plenty of running water, lots of green feed and plenty of charcoal the birds improved in appearance. When they reached maturity, however, I found that the male was about a quarter-breed and the hens were nothing more than the common Chinese. This illustrates how irresponsible some breeders are. I am glad to learn that your Department of Game Breeding will seek in every way possible to protect purchasers from unscrupulous breeders.

IMPORT INFORMATION.—Breeders sometimes wish to secure birds from Great Britain. They can probably get their orders filled by addressing any of the following:

M. Dwight, Berkhamsted, Herts, England.
McLean & Wormald, East Dereham, Norfolk, England.
Welham Game Farm, Malton, Yorkshire, England.
A. W. Gamage, Ltd., Holborn, London, E. C., England.
Wilts Game Farm, Oxenwood, Hungerford, England.
Norfolk Game Farm, West Bilney, Kings Lynn, England.
Rocketer Game Farm, Wendover, Bucks, England.

All but the first named above are taken from a list obtained some time since, so that it would be well to address several in order to insure getting in communication with one still in business. Laffan & Co., Yokohama, is the only far-eastern house of which I have knowledge.

If possible, in securing English birds, it is more satisfactory to have a representative pick them up on the ground from a number of small breeders than to purchase by order through one house.

THE MARKET ON BIRDS FOR EDIBLE PURPOSES.—Ringneck pheasants, domestic bred, for edible purposes, were $3 @ $3.50 bid, a pair, this fall by retailers and were sold to the consumer at from $4.50 to $5.00 a pair. Wholesalers paid $2 to $2.25 a pair for imported English birds. This represents a considerable advance in price for imported birds, due to

the rise in freights following the war. They have been obtained as low as $1.50 a pair in recent years, it is said. The best of the imported birds were retailed at $4.50 a pair this fall.

Pheasant carcasses are shipped best when crated, six pairs to the crate, with plenty of ventilation. Do not wrap the bodies in either paper or cloth.

While it will pay the breeder at the present time to sell his birds alive, there is always likely to be a surplus of cocks that cannot be disposed of except for table purposes. The wholesaler is out of the question, as both he and the retailer have to get their profit out of any birds sold him before they get to the consumer. The breeder will therefore do well to sell his birds to the retailer direct or, better still, to some club or hotel. One sportsman's club sells its surplus birds to a large New York hotel at $5 a pair.

Wholesalers handle imported birds only. Among the New York City retailers who carry pheasants in season may be mentioned:

Alexander Wilson, 319 Madison Ave.
H. H. Tyson & Co., Madison Ave. and Forty-ninth St.
George H. Shaffer, 673 Madison Ave.
William King, 581 Madison Ave.
George Muller & Son, 932 Sixth Ave.

In the illustration in Figure 15 are shown ringnecks in the windows of one of the above dealers, reared by Mr. Morgan Wing at his Sandanona Pheasantry in Dutchess County, New York.

MARKET NEEDS BROADENING.—The demand for ringneck pheasants for edible purposes in the New York market is limited to people of wealth because of the comparatively high price, and it is active when the social season is on with its consequent entertainment. The first pheasants arrive about October 15 and they are kept in stock continuously until April or even May, depending on the exodus of society to the country. November, December, January and February are the months of greatest demand.

Commenting on the situation recently, Mr. Alexander Wilson, one of the retailers whose name is given above said:

> "I think there would be a great broadening in the market if birds were produced in larger quantities, thereby cutting down the price. Dealers generally, I am sure, would welcome this and in the end it would mean more money to breeders."

Pheasants are killed by inserting a knife in the mouth and running it through the brain. They are neither drawn nor picked. Mr. Wilson states that the imported pheasants are sent over not frozen but rather

chilled, and that they arrive in first class condition. Some dealers, however, complain of the condition of imported birds. He says that domestic birds vary greatly in quality, but that he prefers the best of them to the imported. Pheasants are sold in the market largely in pairs and are graded according to size.

HOTEL MEN WANT MORE PHEASANTS.—Mr. Oscar Tschirky, general manager of the Waldorf-Astoria Hotel, states that the hotels will welcome a large increase in the production of ringnecks. He prefers the native to the bird imported in cold storage and thinks that with the law enacted at the last session of the New York legislature permitting the sale of pheasants at any time, this bird will likely take the place of the guinea to a large extent on hotel menus. Mr. Tschirky expressed deep interest in the movement to popularize pheasant breeding.

LARGEST IMPORTER WOULD WELCOME AMERICAN-BRED BIRDS.—Mr. A. Silz, of A. Silz & Co., wholesale game and poultry dealers at 416 West Fourteenth Street, New York City, who is popularly supposed to import approximately ninety per cent. of the pheasants brought to this country for table use, states that he would very much like to see farmers and any one else who may be interested take up pheasant breeding and

FIGURE 15.—Birds from Mr. Morgan Wing's Sandanona Pheasantry displayed in the window of a New York game dealer.

he thinks there will be an ample market for all that can be produced. "One trouble, I fear, however," he said in discussing the matter, "is that the average breeder would not be content with prices received the preceding year when he came to market his birds the following season. This has been our experience with various kinds of poultry and in this matter our breeders are in marked contrast with those of Europe, who seem content with the same price from year to year provided it yields a fair profit, and who can be depended upon to furnish their quota of birds as each season comes around. That is one reason that we have not made much effort to stimulate American pheasant breeding.

9,000 BIRDS BROUGHT FROM ENGLAND YEARLY.—"Our yearly importation of pheasants averages about 8,000 birds, most of which come from England, but some are Chinese birds. The latter, however, come by way of England also."

If the assumption that Mr. Silz imports ninety per cent. of the pheasants brought to this country is correct, it will be seen that the annual importation runs in the neighborhood of 9,000 birds.

In this connection, it is interesting to note that, under the rulings of the customs office, the ringneck pheasant is a domestic bird, and hence the bringing in of its feathers is not in violation of Schedule N of the tariff law, which forbids the entry of all plumage except that of domestic fowl and the ostrich. On the other hand, the Chinese pheasant is still classified as a wild bird and bond must be given for the destruction of its feathers when it is imported for eating purposes.

MAY DRIVE OUT GUINEA.—The comment of Mr. Tschirky regarding the supplanting of the guinea by the ringneck on the menus of the leading hotels and restaurants is of particular interest. It was the passage of the non-sale of game laws that forced the hotel men to resort to the guinea as a substitute for game. This fowl does not compare with the ringneck in edible qualities and, once the public taste acquires a little more education it seems probable that the latter will force the former into the background. Guinea breeding, if I am correctly informed, took on great strides when the laws above referred to were passed. There is no reason to doubt that a similar experience awaits pheasant breeding.

MARKETING EGGS.—Eggs can be made to form an important part of the pheasant breeder's income. They are in demand from the time the birds start laying, but the wise breeder will see that his own wants are amply satisfied before selling. Egg quotations are given earlier in this chapter and full information as to packing for shipping is contained in Chapter III under the subhead, "Caring For Eggs."

CHAPTER XVI

Establishing and Holding Birds on Preserves—Common Causes of Failure—Pheasant Shooting—Breaking Dogs to Pheasants

The history of American pheasant breeding is replete with instances in which men of wealth have taken it up with high hopes of securing abundant sport, only to meet with failure and disappointment, usually after spending a not inconsiderable amount of money.

Again, several of the states have purchased pheasants in large numbers and turned them loose in their covers in the fond hope that a solution had been found for the passing of the ruffed grouse and quail. Seldom has more than mediocre success attended such efforts, due in large measure to the manner in which they have been carried out.

It must be admitted that such instances as these have given the ringneck a black eye but one which it does not deserve in the opinion of its advocates.

THREE COMMON CAUSES OF FAILURE.—I have attempted to make as careful an analysis as possible of several of the larger and more spectacular failures of individuals at raising ringnecks for sport and I believe that in every instance lack of success can be attributed to one of three things:

1. An incompetent game keeper.
2. Selection of land not adapted to birds.
3. Lack of knowledge of pheasant preserving.

I believe that the first cause has been operative in at least half the cases. The newness of the industry with its accompanying lack of men skilled at the business largely explains the lack of competent game keepers. Owners of estates and all who contemplate engaging a game keeper are advised to read the chapter on that subject, further on.

MUST HAVE ACCESS TO WATER.—Pheasants must have access to water if they are to be successfully preserved. It is a common and fatal mistake to assume that woodland will hold them. Particularly do they like a swamp well covered with undergrowth. A bog with abundant hardhack to give protection from foxes is ideal. A close observer of these birds states that he has seldom seen one more than two flights from water.

In their wanderings pheasants almost invariably follow streams, so that the attraction of water for them is so marked that it must always be considered when it is desired to hold pheasants to any particular part of country.

There have been instances where an estate owner or a club has had a competent keeper and a happily selected preserve and yet has failed utterly to get satisfactory shooting. How often have I had said to me, "We had no trouble raising our birds but after shooting over our covers a few times we found we had driven practically all our birds off our preserve." Now, the individual or owner who goes to the expense of breeding birds naturally is disappointed if an outsider is afforded the privilege of shooting them.

Having thus considered these three most frequent causes of failure somewhat in detail, let us treat them constructively and see what may be suggested to insure success where there has been failure.

Number 1 relates to the game keeper and he is adequately treated in the chapter, further on, which is devoted to him, so nothing further need be said here.

GET EXPERT ADVICE.—Number 2, relating to the choice of a preserve, needs no elaboration here, as scarcely a chapter in this book is devoid of some suggestion, direct or implied, as to the sort of country adapted to pheasant preserving. This further suggestion is made, however. Having decided pretty definitely on a place for your preserve, engage the services of an authority on the subject before closing the deal. If you already own your land, it will still be wise to let an expert lay it out for you. This will consume little time and the expense will be small. The American Game Protective Association will gladly act for owners in such a matter. Address Director, Department of Game Breeding and Preserving, Woolworth Building, New York City.

Interesting work in a typical bit of pheasant cover.

THREE METHODS OF STOCKING.—Error number 3, relating to the establishing and holding of captive-bred pheasants on preserves, requires rather extended treatment. At the present time three principal methods are employed in this country in stocking covers for pheasant shooting.

1. At the Clove Valley Rod and Gun Club, Verbank, Dutchess County, New York, a system of placing birds in covers in open front runs from which they eventually escape has been worked out with great satisfaction to the club members and with the loss of an astonishingly small percentage of the birds that are released.

2. Occasionally some estate owner who has become enamoured of drive shooting abroad establishes it on his preserves. This requires large acreage and is very expensive.

3. Many of the states are endeavoring to afford pheasant shooting to the public, as was stated in the introduction to this book, through the annual distribution of eggs and young birds for the stocking of unposted lands.

These methods will now be considered in detail:

HOW THE CLOVE VALLEY CLUB DOES IT.—For the complete and interesting exposition of method number 1, I am indebted to Mr. Henry Martyn Brigham, counsel of the Clove Valley Rod and Gun Club and author of the original New York Breeders' Bill, which has done so much to encourage game breeding in that state:

> Perhaps the best method of planting ringneck pheasants for shooting is that pursued at our club, where Mr. Neil Clark, the head game keeper, has established an enviable reputation, not only in raising pheasants and mallards, but in releasing them under such conditions as to afford excellent sport.
>
> It is essential that captive-bred pheasants be released in suitable cover, as otherwise they will not remain long at the point where they are let go, and they are likely to flush out of gun shot. A line of fence, along which bushes and brambles, weeds and heavy grass have been allowed to grow unchecked, is ideal for this purpose, particularly if located within one or two flights of a swamp or swale, which is the natural hiding place of these birds. The point selected should be at least one flight from the boundaries of the preserve and as near its center as possible.
>
> BIRDS PLACED IN RUN.—Having selected the cover in which the birds are to be released, three to five are placed in an A-shaped run, which consists of a frame of 2 x 1 stuff covered with two-inch twine netting, tarred, six feet long, two and one-half feet high and the same dimension in width. One end is left open

FIGURE 16.—A-shaped run used in planting pheasants in hedge-rows in Clove Valley Club's method of shooting.

FIGURE 16-A.—This shows A-shaped run after being placed in hedge-row. The brush covering run has been pulled away from one side so as to give a clearer view of the run.

FIGURE 16-B.—This shows keeper releasing birds from sack into A-shaped run.

for the escape of the birds. The run should be well covered with brush. For illustration see Figures 16, 16-A and 16-B.

After the birds have been placed in the run the keeper remains until they have "squatted." In a short time thereafter they will find the opening and wander into the cover along the fence-line.

After an interval of half an hour to an hour, the birds may be hunted with dogs and will lie to a point in much the same manner as quail, particularly if the cover is dense. If released in any other manner they are likely to make long flights and are very difficult to locate.

Under these conditions the dog will usually set the birds, one at a time, near the fence or hedge-row in which they have been released, and those which escape almost invariably will fly down the hedge-row toward the nearest swamp or swale, from which, if it be of considerable size, it is almost impossible to drive them. If there is suitable food in the vicinity, they will be found for weeks after either in the swamp or in neighboring covers.

THE PHEASANT DOG.—It is almost impossible to find the birds without a dog. The best for this purpose is a fast, wide-ranging animal of

the type used for quail, although a staunch slow dog that noses out the trail will work in a very satisfactory manner along the hedge-rows or fences. Either type, with a little special instruction, will soon work satisfactorily either along the fences or hedge-rows or in the swamps, but as the pheasant has a marked tendency to run, I prefer a fast dog that hunts with his head high, makes close points and covers his field rapidly. Such an individual makes his points so close to the bird that it is not likely to run, and on the whole, he is less likely to flush his birds. A pheasant which has several times been pointed by a slow dog is likely to run and flush wild.

In order to work satisfactorily along a fence or hedge-row, the dog must be under perfect control. A wild dog is likely to run down a fence or hedge when a bird has been shot and put up other birds out of gunshot and to chase a bird if he sees one running on the ground.

SCHOOLING WILD DOGS.—It is comparatively easy, however, to break a dog of these tendencies, and my method has been to take a pheasant from the aviaries before the shooting season opens, clip one wing so that the bird can make a flight of only fifty or a hundred feet, attach to the leg of the bird a strong cord of about twenty-five feet in length, and release it in a meadow where the grass is sufficiently high and thick to prevent its being readily seen. I then take a piece of clothesline forty or fifty feet in length, form a slipping noose in one end, and fit this around the dog's neck. As the string always trails over the grass it is easy to determine exactly where the bird is, and when the dog approaches the pheasant sufficiently close to make a point, the attendant stops him with the line, and I go on and flush the bird. If the dog attempts to break his point or follow the bird, the attendant again checks him with the line. It is apparent that many points may be obtained in a very short time and the dog soon learns that he must not follow or chase the birds. I then work the bird into thinner cover where the dog can see the bird on the ground, and if, on approaching, he attempts to chase the bird, the attendant checks him with the line. It is not usually necessary that a dog which has been broken on quail should be taken out more than two or three times in this manner before he has thoroughly learned that he must not chase birds when flushed, or when he sees them running on the ground, and when this has been accomplished the dog will be found very serviceable.

METHOD GIVES REAL SPORT.—I have taken experienced sportsmen on our preserve and tried them out with pheasants planted as above described, and also on wild birds, and they have been unable to distinguish between the wild birds and the birds which had just been released.

The great value of this method of releasing birds lies in the fact that they furnish excellent sport on comparatively small preserves, where driving would be impossible. The latter method necessitates a large area and great expense, as a far greater number of birds will be killed and without affording anything like the same quality of sport. It is also doubtful whether natural covers could be obtained which would be suitable for this purpose.

To me one of the greatest pleasures of field shooting is in observing the work of a well-trained and intelligent dog.

Fortunately, in the Clove Valley we have several large swamps where the released birds which escape the guns eventually go. These swamps afford excellent sport, but the difficulties involved in shooting birds in them are such that many of the members prefer shooting the birds released along the hedge-rows where the conditions are much less difficult.

So far as I have been able to ascertain, the members bring in and account for between eighty and ninety per cent. of the birds released.

FOUR MONTHS OF SHOOTING.—As the New York law now stands, ringneck pheasants reared on a wholly enclosed preserve may be taken at any time during the year. We shoot them, however, only during October, November, December and January. In the early part of October, we shoot only the wild birds and in the latter part of the month release a few additional birds in the swamps. During November and December birds are released along the fence and hedge-rows in the manner above described, and during January the members are at liberty to shoot the birds in the swamps, an endeavor being made during that month to kill as many of the cock birds as possible, as the wild birds seem to breed better when there is only one cock bird to about three hens.

Neil Clark, head game keeper, Clove Valley Rod and Gun Club, Dutchess County, New York.

Supplementing Mr. Brigham's interesting description, it may be mentioned that Mr. Clark, the head keeper keeps his young birds in the rearing field until late September or early October before placing them in large, covered pens of the type employed by Superintendent Duncan Dunn at the New Jersey Game Farm.

FIGURE 17.—Birds being driven down the V-shaped run in covered pen on Clove Valley Club's Preserve. When a sufficient number for the day's shoot have entered the coop the door is closed and the birds captured.

The pen has also, in one corner, the small house employed by Mr. Dunn for catching and shelter. Into this house are driven early each morning enough of the captive birds to meet the requirements of the members who intend shooting that day. A wire run, 60 feet long, gradually converging toward the entrance to the house, is employed in driving the birds into it. Figure 17 shows birds being driven down this run to the door of the house, which is seen in the picture. When a sufficient number of birds have entered the house, the keepers capture them and place them in wheat sacks in which they are taken to the covers for the day's shooting.

SIXTY BIRDS FOR EACH MEMBER.—Members order their birds and draw for covers the preceding evening. Each member is entitled to have 60 pheasants planted during the season, and it is customary to put them out in lots of five or ten at a time. Not more than five birds are placed in a run. Experience will have to be relied upon to teach the beginner how far apart the various runs should be placed.

The Clove Valley Club has sixty members and the country that is shot over comprises approximately 2,000 acres. This is a succession of open fields, whose boundary hedges and fences have been allowed to grow into a tangle of shrubs and vines, bogs and thick-covered swamp. The illustration in Figure 18 affords some idea of the treatment given field boundaries so as to afford cover for the planting of pheasants.

"CANNED SPORT."—I am quite aware of the fact that planting birds in the manner described above suggests what one critic has, somewhat slangily, termed "canned sport." The answer to such criticism lies in

the fact that it depends on the individual, just as it does in general field shooting, as to whether the taking of game under the conditions just described shall be done in a sportsmanlike manner. One who cares nothing for the ethics of sport will transgress in whatever circumstances he finds himself placed while the real sportsman will be all that the name implies, however placed. I do know that some of the keenest sportsmen of my acquaintance belong to the Clove Valley Club and that they are enthusiastic about the sport the system in vogue there affords.

Furthermore, let us consider the fact that the Clove Valley system makes possible an extension of sport throughout the country that would not have been thought possible a few years ago. Under it there is no section of the country, however depleted its covers may be of native game, that cannot have pheasant shooting and have it at cost or less.

FIGURE 18.—Illustrating treatment given field boundaries so as to afford cover for pheasant planting on Clove Valley Club's Preserve.

CHAPTER XVII

Drive Shooting—Washington's Unique Plan of Stocking Public Coverts—Planting Broods with Their Foster Mothers

We come now to method number two of stocking covers with pheasants for shooting. This is practically the British system in which a succession of covers, some natural and some artificial, are located over a large acreage and the birds driven from one to the other by beaters, the guns being placed about each covert as it is beaten so as to afford the maximum of sport. This does not make a general appeal in this country, where field shooting behind a dog has become so firmly intrenched that sportsmen are loath to accept any substitute. It is only fair to say, however, that driven birds can be made to furnish excellent sport, as many American sportsmen who have shot abroad will testify and the criticisms that are sometimes leveled at this method of shooting usually proceed from some one not fully informed.

Occasionally drive shooting is done in this country, though the expense involved and the lack of game keepers experienced in it, combined with the national preference for field shooting combine to make the instances rare.

THE HISTORY OF ALLAMUCHY.—There is one spot in this country, however, in which pheasant driving was done on a large scale and most successfully for a number of years. I refer to the adjoining estates of Winthrop Rutherfurd and the late Rutherfurd Stuyvesant, at Allamuchy, N. J., in the hill country that characterizes the northwestern section of that state. Here it was that the ringneck was introduced into eastern United States by Mr. Stuyvesant, as has been stated, and here Messrs. Duncan Dunn and Adam Scott, head game keepers respectively for Messrs. Stuyvesant and Rutherfurd, made possible through their skill the first demonstration of real pheasant driving that this country had ever seen. Here foregathered in the fall many of those best known in the society of that day and no sporting event of the year was more eagerly looked forward to than the shooting at Tranquillity Farms.

Mr. Stuyvesant was enthusiastically working out plans for an enlargement of the shooting, so successful had it been, when death fell upon him. With his passing the glories of Tranquillity Farms from a sporting standpoint departed.

A GREAT PRESERVE DESPOILED.—I recently motored to this spot in company with Mr. Adam Scott and grieved to see how it had fallen

FIGURE 19.—Keepers gathered about the day's bag after a pheasant drive in the "good old days" on the estate of Winthrop Rutherfurd, Allamuchy, N. J. Duncan Dunn and Adam Scott are, respectively, second and third from the right.

into decay as a preserve. The utilitarian hand that now has charge of the place has actually removed some of the beautiful artificial coverts, not hesitating to destroy the many beautiful native tamaracks that abounded in these and had attained splendid growth. Cows and sheep now graze the hills where once the deafening whir from scores of impetuous wings of driven birds was heard. A feeling of melancholy came over me as I pondered the gayety that had once been there and as I thought of the spirit of the man who had made its past glories possible there came to my mind these words from Lalla Rookh:

"Lorn as a hung-up lute which ne'er hath spoken
Since the sad day its master chord was broken."

Since Rutherfurd Stuyvesant's death, there has been no sustained effort at pheasant driving in this country, so far as my knowledge goes. A brief description of the shooting at Allamuchy may be of interest.

The adjoining estates had a total area of some 8,000 acres, I believe, and of this approximately 1,000 acres, lying more or less at the center of the valley down which the birds were driven, was employed for the shooting. There were twenty-four coverts from which the driving was done. These were from 200 to 400 yards wide and averaged a mile in length. Wherever possible they were placed from 150 to 200 paces apart, that distance having proved the one at which the birds were most likely to fly from one covert to another when driven. On entering these coverts from

FIGURE 19-A.—Pheasant beaters in uniform. Taken at the end of a day's shoot on the Rutherfurd Stuyvesant and Winthrop Rutherfurd estates.

the side which the beaters approached one encountered first a row of trees, next came a strip of buckwheat, followed by another row of trees. A strip of millet came next and then a third row of trees, flanked by a strip of corn. The outer edge of the covert, in front of which most of the guns were placed, was bordered with an arbor-vitæ hedge. This shrub grows so close to the ground that it almost inevitably precludes any chance of birds running out instead of flying. It serves also to hide the guns from the birds. The majority of the guns faced the direction from which the drive came, but one gun was placed on either side and one in the rear.

The coverts were arranged as nearly as possible in a circle and the last drive of the day was made toward the center. All this, of course, minimized the chances of driving the birds off the place in the shooting.

LOCATING BIRDS IN COVERTS.—The rearing fields at Allamuchy were in the vicinity of a majority of the coverts, and the young birds were allowed to locate in the latter as they grew strong enough to fly over the fence surrounding the field. In order to stock outlying covers, broods were taken there with their foster mothers when six to eight weeks old and fed until weaned, by which time they would be well established. Mr. Dunn states that he found, once a pheasant started roosting in a covert, it took a great deal of driving and shooting to make him stay away.

Game fowl were sometimes employed to induce young pheasants to roost. As soon as the birds commence to roost the danger of loss by vermin is greatly diminished, of course.

ALLAMUCHY'S RECORD.—Mr. Adam Scott, head game keeper at Spring Brook Game Preserve, Mr. Winthrop Rutherfurd's estate near Allamuchy, and now occupying a similar position at Mr. Grant B. Schley's Froh-Heim Preserve at Far Hills, New Jersey, has furnished me with the following interesting statistical information regarding the birds reared and killed on the Rutherfurd preserve during the time that pheasants were driven there:

PHEASANTS SOLD FROM 1903 TILL 1909

Total for 1903	56	Realized	$ 155.50
Total for 1904	107	Realized	301.00
Total for 1905	284	Realized	496.50
Total for 1907	188	Realized	394.00
Total for 1908	540	Realized	716.00
Total for 1909	924	Realized	1665.75
Total for 6 years	2099		$3728.75

PHEASANTS KILLED FROM 1898 TILL 1907

Total for 1898	179
Total for 1899	492
Total for 1900	468
Total for 1901	281
Total for 1902	726
Total for 1903	1047
Total for 1904	893
Total for 1905	1144
Total for 1906	1425
Total for 1907	1098
Total for 10 yrs.	7753

Largest bag in one-half day 614, with 12 guns.

Largest bag in one season 1425.

With regard to the pheasant figures given above, it is interesting to know that Mr. Scott estimates, apparently conservatively, that probably double the number of birds were raised that were killed.

The photograph reproduced in Figure 19 shows the keepers gathered about the day's bag on the Rutherfurd estate in the "good old days" and Figure 19-A shows the uniformed beaters. I shall be glad to put any one interested in driving pheasants in touch with keepers experienced along that line.

PLANTING IN PUBLIC COVERTS.—Planting birds, hand-reared on state game farms, in public coverts has been done with such good success in several states that large numbers are taken yearly during the open season without unduly diminishing the supply. The Chinese pheasant is

abundant in the wild state in Oregon and Washington and the ringneck is to be found in goodly numbers over a large part of central and northern New York and in Massachusetts, largely as the result of such efforts. In other eastern states it is fairly abundant in certain sections.

In most of the states which have established game farms young ringnecks are distributed each year gratis on application. Reports made to the American Game Protective Association this fall show that 28,725 birds were reared during the year on state game farms for this purpose. In passing on applications the distributing authority is guided largely by the benefit that will accrue to sportsmen generally of the community in question. Releasing birds from a state farm on one's land operates automatically to prevent the owner from ever forbidding shooting by the public upon it in the future, and this, of course, deters many estate owners from resorting to that method of stocking. However, many sportsmen's clubs have succeeded in securing the consent of farmers to release birds on their lands, a consideration being involved in some instances, doubtless, and these organizations are exceedingly helpful in getting the year's crop of birds placed where they will do most good. Birds are sent out during the latter part of July and through August and early September usually, when they are anywhere from six weeks to two months old.

SHIPPING HEN WITH BROOD.—This year New York tried with success the experiment of shipping birds for stocking with their foster mothers. The crate shown in Figure 20 was used for this purpose. It is 29 inches long, 17 inches wide and 12 inches high. The interior is divided into three compartments of equal size separated by sliding partitions. A space 10 inches long x $3\frac{3}{4}$ inches high is sawed out of the bottom of both partitions to permit the birds to pass from one compartment to another. The hen mother is placed in the central compartment and, of course, cannot pass to the others. A 4-inch board is nailed across the top, at the center, on which the label is pasted. Burlap or coarse sacking is tacked over the top as cover and a strong handle affords ease in handling the box. The boards composing the sides are nailed 1 inch apart to afford ventilation. From fifteen to twenty birds are put in one of these crates, according to size.

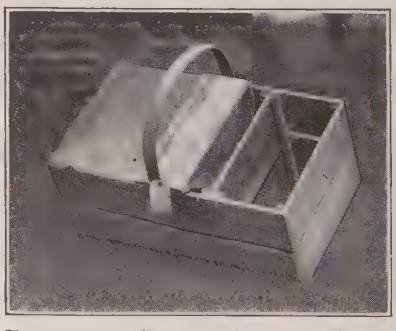

FIGURE 20.—Crate used on New York State Farm for shipping foster mother and brood of young ringnecks.

On arrival the brood thus shipped is placed with the mother in convenient cover, usually with a coop for shelter, and feeding is done till

the birds are weaned, when the hen is caught up and shipped back to the farm. Superintendent Rogers is well pleased at the outcome of this experiment.

In New York pheasant eggs are distributed on application in the spring. As stated in Chapter I, some sportsmen's clubs pay farmers to incubate eggs thus obtained and, in addition, many farmers apply for eggs on their own responsibility, some for the pleasure of seeing the birds on their land and some because of the pheasant's value as an insect destroyer.

WASHINGTON PLAN MERITS SERIOUS CONSIDERATION.—The State of Washington has adopted a method of raising revenue for sport, breeding game and stocking covers which merits the serious attention of the entire country. Briefly stated, most of the revenue derived from the sale of hunting licenses accrues to the county from which it comes and is disbursed by a county game commission. In other words, the county rather than the state is the unit for the administration of matters relating to game. Again, these county commissions are clothed with power to establish game farms and to set aside by proclamation as many areas as they choose as game preserves. Let Mr. H. Rief, secretary of the Game Commission for King County, Washington, tell the rest of the story:

> Game in this county, of which Seattle is the county seat, is in the control of a commission which has established a game farm of seventy-two acres and set aside by proclamation seven preserves within the county of approximately 1,000 acres each on which birds that we have reared on our farm this year have been liberated. There will be no shooting on the preserves this year but the year following they should furnish excellent sport. Meantime other tracts will be set aside by proclamation and young birds placed upon them in like manner. We place the birds on the preserves when they are approximately two months old, usually sending their cochin bantam foster mother with them, and the brood is kept in sight by a keeper till it is well established.
>
> GETTING YOUNG BIRDS SETTLED.—We feed these birds for the first month or so, or as long as they stay with the foster mother. The hen is at first confined in a coop and the youngsters allowed to run. After they become familiar with the place she is permitted to go with the birds and each night they will return to their roosting place, where they are fed and watered. When the color feathers begin to show the chickens will abandon the hen. She is then caught and returned to the game farm. We have had wonderful success with this plan and the vigor of the birds thus

given free range seems to show that confinement has much to do with the ills of hand-raised pheasants. While we have been very successful, there are always some fatalities.

We have raised, this year, 3,400 ringnecks and about 80 to 90 Prince of Wales, 30 to 35 Mongolians, besides some silvers, goldens, albinos and Reeves.

While our game farm embraces some seventy-two acres, there are only ten cleared at this time. The rest of it is covered with heavy timber. We find that the Chinese pheasant wants meadows, cultivated lands, green fields and potato patches where weeds and insects thrive.

Mr. L. H. Darwin, State Game Warden, writes me that Thurston County, in which the capital city of Olympia is situated, also has a game farm and that these counties are engaged in game and game fish propagation: Island, Spokane, Snohomish, Clarke, Pend Oreille, Ferry, Chelan and Kittitas.

This completes the discussion of the third and last method of stocking covers with pheasants and also the attempt I have made to show how to avoid the third of the causes commonly fatal to success in rearing pheasants, namely, lack of knowledge of pheasant preserving.

We shall consider next how to organize to conduct pheasant shooting successfully.

CHAPTER XVIII

How to Organize Co-operatively for Successful Pheasant Shooting

When the fact that pheasants reared co-operatively can be made to furnish all the sport that is desired and actually yield a dividend on the investment becomes general knowledge, it would seem that there would ensue such an increase in the breeding of these birds throughout the country as can hardly be estimated at the present time. This surprising statement may be received with some incredulity, but its truth is demonstrable and the thing is actually being done.

PROFITABLE SHOOTING AT CLOVE VALLEY. I am much indebted to Mr. Henry Martyn Brigham, whom I have previously quoted at length, for the following account of the activities of the Clove Valley Rod and Gun Club which can be cited in proof of the statement made immediately above:

> It is not only my opinion, but the opinion of Mr. Neil Clark, our head game keeper, that it would be easily possible for a club, having from ten to twenty members, to raise thirty-five hundred to four thousand pheasants each year and release a thousand to fifteen hundred for their own pleasure, sell the balance in the open market, and, most astonishing of all, receive annual dividends on their memberships instead of being compelled to pay annual dues.
>
> If clubs similar to ours could be organized and established one or more in each county throughout the state, the question of stocking the open covers with pheasants would be solved, without expense to the state, and with profit, as well as sport, to the members of such clubs.
>
> Early in the year 1911, I was requested by the Clove Valley Rod and Gun Club, to go over its items of disbursement and suggest such curtailments as would bring its expense within its income.
>
> For several years prior to that time the club had bred pheasants and mallard ducks in considerable numbers, which were released and shot by its members on its preserves in Dutchess County. But, while this sport had proved exceedingly attractive, the balance sheet each year had shown a considerable deficit, particularly at the outset when considerable sums were necessarily expended in building its breeding plant.
>
> I reached the conclusion that the expenses of the club could not be substantially lowered without reducing the number of pheasants

and ducks which each member was permitted to kill, I was sure that any such reduction would cause dissatisfaction and, further, that if dues were substantially increased it would not be possible to hold the membership. The only solution of my problem was, therefore, to increase the revenue of the club.

GREAT HELP AFFORDED BY BREEDERS' LAW.—The Bayne Bill, which prohibited the sale of all wild game birds in our markets, was then pending in the legislature, and after consulting with our Game Committee and Mr. Neil Clark, our game keeper, I became convinced that if the bill should pass, and in addition, legislative sanction were given to the sale of captive-bred pheasants and mallard ducks, these could be raised and sold in the open market at a substantial profit. My idea was that our club should raise a number of each of these species considerably in excess of its requirements, the profits on the surplus birds to be employed in solving our financial difficulties. I accordingly drafted the original Breeders' Bill, which, after introduction, was incorporated in the Bayne Bill, and shortly thereafter was passed and signed by Governor Hughes.

The plan worked out even better than I anticipated. We found that by raising both pheasants and ducks in large numbers, the cost of each was materially reduced. A careful analysis shows that we are able to produce both ducks and pheasants at a cost of about $1.25 each, provided the ducks are disposed of before the end of November. Breeding costs are: food for pheasants, to January, 75 cents each; food for ducks if marketed

Pausing for his photograph in the midst of an interesting day in the pheasant coverts.

before the end of November, the same. Cost of labor for 6,000 birds is less than $2500 and other expenses total about $500.

READY MARKET FOR BIRDS.—We have always found a ready market for many more birds than we could produce, at a minimum of $5 a pair for pheasants and $3.25 a pair for ducks.

By carefully selecting our breeding stock, we have, for several years, had unusually fine strains of both the pheasants and ducks. These command top prices for breeding purposes.

The club membership is sixty. Last year there were killed 2300 pheasants and 1100 ducks, and these numbers will probably be exceeded during the current year.

Our plan of not removing the year's hatch from the rearing field to covered pens minimizes the loss that always occurs when pheasants are closely confined and gives us birds in fine condition, strong of flight, which furnish excellent sport when shot over a dog.

ERRATIC FLYERS IN WOODLAND.—Sometimes we release pheasants in small patches of timber with thick underbrush. When flushed in such cover, like ruffed grouse, their flight is rapid and erratic, and they are almost equally difficult marks.

SWAMP REFUGE OF BIRDS.—The birds which escape seek the swamps, which are both large and plentiful on our preserves, and there they test the skill of the gunner to the limit, and, as game birds, are only equaled by our bobwhite and that king of all game birds, our native ruffed grouse, both of which, unfortunately, are rapidly disappearing from our covers. Taken all in all, ringnecks are in some respects superior as a game bird to ruffed grouse. They are usually found in much more open covers, lie better to a dog, and, as they are less erratic in flight, are more easily brought to bag. They are also a much finer table bird, larger in size, and more brilliant in plumage.

A hard day in one of our swamps, with a fair percentage of kills and keenly regretted misses, has never failed to convince the most skeptical that our pheasants are not only real game birds, but also that under these conditions they present many well-nigh impossible shots.

The rearing of pheasants is not attended with any great difficulty to one who thoroughly understands this work, and they can be bred with almost the same certainty as any domestic fowl. Where they are bred in open fields, as at Clove Valley, many of the young birds each year escape from the club preserves before the shooting season comes. These go to stock covers open to the public and for miles around our preserve wild pheasants are plentiful.

If grouse and quail could be bred and released in the same numbers

and at the same expense as pheasants, I would say raise grouse and quail, but, unfortunately, they cannot, and even if they could, I would also be in favor of raising and releasing pheasants.

It is often claimed that pheasants drive out ruffed grouse. My observation is to the contrary. On our preserve the grouse never frequent the pheasant covers till late in the season and they have been more plentiful at times since pheasants were introduced by us than they were before. I am certain that this charge is utterly unfounded.

All that we can do for our grouse and quail is to protect them, in so far as possible, by prohibiting the sale of these birds, restricting the number which gunners may kill, and keeping down the vermin which are their most destructive enemies, but even then, they are so likely to be destroyed by severe winters and unfavorable climatic conditions during the breeding season, that the crop is always an uncertain quantity, whereas, with pheasants, the reverse is the fact.

CLUBS SHOULD FOLLOW CLOVE VALLEY'S EXAMPLE.—It is my hope that within the next few years many clubs will be organized throughout the state which will take advantage of our liberal Breeders' Bill. There are many sections of the state well adapted to pheasants where it would not be possible to restore the grouse because of the lack of suitable covers.

Prior to the introduction of pheasants in the Genesee Valley, ruffed grouse and quail were almost extinct. Because there were many covers suitable for pheasants, a plentiful supply of food and few vermin in this section, these birds increased in enormous numbers during the closed season, which ended a few years since, and but for the fact that almost as many hen as cock birds are killed, they would now be more numerous than our native game birds ever were.

Three years ago I was in Monroe County on the first day of the open season for pheasants, and it seemed to me that every man and boy who was able to carry a gun was afield. A dealer in firearms told me recently that more shotguns were sold in Rochester, New York per capita than in any other city in the country.

COOPERATIVE PHEASANT SHOOTING.—In order to get pheasant shooting at cost or less, it is by no means necessary to have a club of sixty members or a club house, though a good-sized membership and a house are both desirable features. There are few neighborhoods in this country in which ten or more sportsmen could not combine with profit and practically every sportsmen's club could have its pheasant shooting for nothing if it went about the matter along the lines indicated above.

There are several ways of organizing for pheasant shooting that suggest themselves:

1. The first of these is the Clove Valley method, where men from the city, for the most part, have combined, secured control by purchase or lease of a large tract of typical pheasant country, a club house has been built and a head game keeper and several assistants have been employed. The club is more than two hours from New York City, where many of the members live. This plan has been so thoroughly discussed that it needs no elaboration further than to state that under it each member is afforded an opportunity of taking pheasants, mallards and fish exceeding in market value the sum of $200 which is paid in annual dues.

2. In any section where the owners of a number of adjoining estates wish to take up pheasant shooting, these estates, under the New York law, can be combined as a preserve, stocked with hand-reared birds, and fine sport can be assured. I have recently been asked for advice regarding organization under just such conditions. Among my suggestions were:

First: Form an incorporated association or club consisting of the owners of the estates to be combined in the preserve.

Second: Take out a breeder's license.

Third: Secure a game keeper, one versed in the Clove Valley Club's method of stocking covers preferred, and arrange for the breeding of ringnecks on the estate of one of the members.

Fourth: Post land composing the preserve with frequent signs.

The above will be discussed seriatim somewhat in detail.

HOW TO FORM AN ORGANIZATION.—To form an association or club in New York, hold a meeting of those interested and adopt a resolution to incorporate, written in duplicate and signed by at least five of those present. File one copy of this with the Secretary of State at Albany and another with the county clerk, after having first presented it to a justice of the Supreme Court for approval.

Five or more persons may become a membership corporation under the laws of New York, by making, acknowledging and filing a certificate stating the particular objects for which the corporation is to be formed, each of which must be such as is authorized by law; the name of the proposed corporation; the territory in which its operations are to be principally conducted; the town, village or city in which its principal office is to be located, if it be then practicable to fix such location; the number of its directors, not less than three nor more than thirty; and the names and places of residence of the persons to be its directors until its first annual meeting.

An unincorporated club, society or association organized for purposes for which a membership corporation may be created, may, by unanimous vote of its members present and voting at a regular or regularly called meeting thereof, authorize its directors to incorporate for the same purposes, with a corporate name adopted at such meeting, if notice of such intention so to incorporate be given at least thirty days before such meeting, personally or by mail, to each member of such association, whose post-office or post-office address is known.

Such corporations cannot issue certificates of stock or be organized for profit.

The proper form of resolution authorizing the directors to incorporate is as follows:

WHEREAS, is an unincorporated club (society or association), organized for the following purposes, namely,

and

WHEREAS, thirty days prior to the date of this regularly convened meeting notice of the intention to incorporate under the general provisions of the laws of the State of New York relating to membership corporations was given to each member of said club (society or association), whose residence or post-office address is known, and a quorum being present,

NOW, THEREFORE, upon motion duly made, seconded and unanimously carried,

BE IT RESOLVED: That the directors of said be and they hereby are authorized to incorporate the same, for the same purposes, namely,
under Article III of the Membership Corporations Law of the State of New York, with a corporate name of which is hereby adopted as the name of such membership corporation.

After such a resolution has been adopted the corporation must be organized by the directors, by five or more of them executing and filing a certificate of incorporation. The members of such club or association then become members of the corporation and all of the property or assets of the association become the property of the corporation.

The fees of the secretary of state are approximately $12.50. A form of constitution suited to the purposes of such an organization as is suggested will be found in the appendix.

It is obviously impossible to give information similar to the above for any considerable number of states and New York was selected as affording as good an example as any. In nearly every community will be found a sportsman attorney who will furnish information to any group of enthusiasts wishing to organize along the lines indicated.

We will assume that the owners of fifteen estates have thus joined forces in an association in order to secure ringneck shooting. At the meeting held to incorporate, a sinking fund for the first twelve months' expenses should be provided for in the form of dues. It would be necessary to rear for purposes of sport 60 birds for each member, making 900 birds in all, but, in order to make the venture at least partly self-sustaining, extra birds should be reared for purposes of sale.

THE FINANCIAL SIDE.—Suppose we assume that the club will endeavor to rear twice as many birds as it wishes for purposes of sport, making 1,800 in all. Estimating the cost of rearing each bird at $1.50, it will be seen that the total would be $2,700, but to this should be added at least $1,500 for the purchase of breeding stock, construction of pens and coops and the erection of fences the first year. We thus have a total of $4,200 to be divided among the fifteen club-members, a per capita of $280. In organizing it would be well to provide for $300 dues the first year, payable in equal installments in January, March and July, and $200 thereafter, payable in January and July.

Basing calculations on the estimates pretty generally agreed upon by experienced game keepers, it would be necessary to procure 180 pheasant hens as breeders and 36 cocks to produce 1,800 birds. This estimate is based on the bringing to maturity of 10 birds for each pheasant hen employed as a breeder. As most game keepers consider that, year in and year out, a good man can be expected to bring to maturity an average of half the birds placed in the rearing field, it would be necessary for the club in question to have hatched 3,600 birds. These will take all the time and energy that a head game keeper and two assistants can give them.

Assuming that 1,800 birds are reared the first year, the club's balance sheet at the end of the twelve-month would read about as follows:

Debit		Credit	
Cost of rearing 1800 birds at $1.50 each	$2,700	900 birds placed in covers for shooting at $3 each	$2,700
Equipping plant for rearing birds	1,500	720 birds marketed at $2.50 each	1,800
180 hens retained for next year's breeding stock at $3 each	540	Sale of 1500 eggs at $20 a hundred	300
36 cocks purchased to renew blood at $3 each	108		$4,800
	$4,848		

SOME PROFIT FROM EGGS.—In order to hatch 3,600 pheasant chicks it would probably be necessary to place 5,000 eggs under hens. This

is estimating approximately a 75 per cent. hatch. As the pheasant hens would almost undoubtedly lay 1,500 eggs in excess of the number needed for incubation, the sale of these has been included as one of the sources of profit in the year's work.

After several years of breeding, the covers of the various estates forming the preserve would become well-stocked with wild birds, but it would always be necessary to rear a considerable number if they were to be well shot over each year.

It is assumed in the above that the Clove Valley Club plan of planting birds in covers would be followed and in this connection it is well to emphasize the importance of having fences and hedge-rows with sufficient cover about them to hold the birds when they are shot over a dog. The present-day tendency to keep fence rows clear of all growths has much to do with the scarcity of game, and cover such as this is just as necessary for pheasants as for quail.

The New York law specifies that pheasants reared under authority of a breeder's license may be killed at any time in any manner, if reared on a wholly enclosed preserve or entire island owned or leased by the breeder. The scheme suggested above seems to come well within these provisions. The breeding would be done under a license issued to the club that would be formed and the birds that were reared would be planted in the covers of the various estates of the members of the clubs, the shooting rights on which would have been leased to the club for a nominal sum. A wholly enclosed preserve is defined in the New York Conservation law as follows:

> "WHOLLY ENCLOSED LANDS" DEFINED.—"Where lands are referred to as 'enclosed' or 'wholly enclosed,' the boundary may be indicated by wire, ditch, hedge, fence, road, highway, water or by any feasible or distinctive manner which indicates a separation from the surrounding contiguous territory, except as otherwise provided."

In forming a club, it would be necessary or, at least, highly advisable to post at intervals of fifty yards or less around the boundaries of such lands as it was proposed to shoot upon, a sign reading as follows:

> "Trespassing, shooting or fishing on this *wholly* enclosed preserve is prohibited under penalty of the law."—Game Protective Association.

This is the sign used by the Clove Valley Club. It is shown in the illustration in Figure 21. Paraffined paper has been found a durable and inexpensive material for signs of this character. They are tacked to a board, as will be seen from the illustration. As previously stated, the

Clove Valley Club uses for shooting only 2,000 acres of the 10,000 or 15,000 that it owns or controls. It is around the smaller area only that these signs are placed and a single strand of wire surrounds that portion of it which has no other distinguishing boundary mark.

3. A third method of organizing for pheasant shooting consists in an organization of the land owners in any neighborhood with the burden of rearing birds for shooting distributed among them. The labor and expense of rearing 50 birds is very small indeed, and any rural community adopting this method and planting its birds in covers after the Clove Valley plan would be assured good shooting. Here, too, it would be a good plan to form an association and do the breeding and posting of the land in its name. Any members so situated that they could not help in the rearing of birds should be assessed for their share of the total reared.

In this plan the expense of a game keeper and, to a large extent, of pen construction, is done away with, the several members doing the work of the game keeper. Where only a few birds are reared it is seldom necessary to use any enclosure for them and this cuts out the expensive item of wire poultry netting. In any scheme of pheasant shooting a minimum of 200 acres of land, including forty or fifty acres of swamp, if possible, should be controlled.

There are few sportsmen's organizations that could not with profit use some modification of the Clove Valley plan. Perhaps the most feasible method for these would be to engage a sufficient number of farmers to rear the birds that would be needed. The privilege of planting and shooting birds thus reared on the farm of their nativity would doubtless be granted, and many an organization that today is more or less moribund could be galvanized into activity if only a few of the members addressed themselves seriously to the matter of securing pheasant shooting along the lines that have been so fully detailed heretofore. Once the sportsmen of the United States awake to the ease and inexpensiveness with which pheasant shooting can be secured, it will, in my opinion, rank second to none in their field activities.

4. The fourth and last method I have to suggest relates to the individual sportsman resident in village or city who wants a little sport and who, under present conditions, is not able to obtain his wish in very many parts of the country.

SHOOTING FOR THE AVERAGE SPORTSMAN.—Anyone so situated should gather about him fifteen or twenty or even more of his fellows, get in touch with the farmers or farmers' wives of the surrounding territory, and fix up an agreement whereby the latter will rear an average

of fifty or sixty birds for each of the sportsmen joining in the movement. A dollar for each bird brought to the middle of September would be about the right price for this service.

Each farmer entering the agreement should be furnished with 100 eggs for incubation. These may be bought outright or breeding stock may be purchased and placed with one of the farmers party to the agreement and the eggs obtained in that way. The latter method is much the cheaper. If breeding stock is purchased, estimate an egg production of twenty for each hen.

Let us suppose that ten dwellers in village or city who cannot afford a club or private preserve determine on this method of obtaining sport, practically at their doors.

SIXTY BIRDS PER CAPITA.—As sixty birds will furnish a good season's sport, the endeavor should be to have raised 600 birds for the group of ten. Bearing in mind that fifty per cent. of the eggs placed under hens should result in matured birds under average conditions, we see that 1200 eggs would be called for for incubating purposes under the present scheme. At $25 a hundred this would mean an outlay of $300 if this method were followed. If, however, sixty hens and twelve cocks were purchased at $3 each the expense would be $216, plus the comparatively small cost of pen construction, care and feed, and this number of hens should produce the 1200 eggs needed.

Estimating the cost of rearing the 600 mature birds that should result from the 1200 eggs at $1.50 each, we have a total cost, if breeding stock is used instead of eggs to effect a beginning, as follows:

Cost of 72 breeders	$216.00
Cost of rearing 600 birds	900.00
Add for incidentals	100.00
Total Cost	$1216.00

This is an average of $121.60 each for the ten sportsmen joining in the scheme. If the birds are planted after the Clove Valley method, each sportsman should bring 75 per cent. of the birds released for him to his gun. This is an average season's bag of 48 birds for each individual. Let us suppose that our man elects to keep 12 of this bag for his own uses and disposes of the remaining 36 at $3.50 a pair to some club, hotel or retailer. In that event he would receive in cash $63 which, deducted from his original outlay, $121.60, would make the net cost of his season's sport $58.60.

EXPENSE OF TRAVEL ELIMINATED.—When one considers that all this sport could be obtained without going to much more expense of travel than is involved in running out to the country for a game of golf, it would seem that it offers the best solution that can be obtained for the

problem of furnishing sport to the man of moderate means who cannot spare much time from his business for indulgence in his favorite form of recreation.

Plans are under way whereby sportsmen situated as previously described and farmers in surrounding territory wishing to take up pheasant breeding may be brought together and individuals of either class who are interested are invited to write the American Game Protective Association, Woolworth Building.

If a per capita of only 30 birds was reared, each sportsman would be afforded a very fair season of sport, and the figures given above could be nearly halved.

PRESERVES STOCK PUBLIC COVERS.—Wherever a large number of pheasants are raised and liberated, a considerable percentage of the birds inevitably escape to covers to which the public have access. At the Clove Valley Club the birds are bred in a large field surrounded by chicken wire, and in the latter part of September and during the early part of October, are caught and confined in aviaries. At this time, being nearly full-grown, they no longer come to the hen mother, but return to the breeding field only because of the protection and food which they find there. A considerable proportion of these birds cannot be captured and when frightened by attempts to trap them, they leave the breeding field and never return.

"I have frequently, when hunting covers to the east and west of the club preserve flushed pheasants," said a member of the Clove Valley Club recently, "and, with a view to ascertaining the conditions, have questioned a good many of the farmers, for five or six miles north, south, east and west of the preserve, and they have told me that since a year or two after birds were released at our club, they have been fairly plentiful within the radius mentioned.

"I hunted over the preserves of the Club for some six or seven years prior to the time when it released pheasants," he continued, and never saw or heard of any pheasants upon its preserves up to that time.

SPORTSMEN ATTRACTED FROM A DISTANCE.—"So plentifully have the public covers been stocked from the club's overflow that one man living in Clove Valley makes it his business during the fall to entertain and take out hunters who shoot on the borders of the preserve. Among those who enjoy this shooting are a number of New York City policemen.

"Early in November I was in Poughkeepsie, on my way to Sullivan County, when a farmer stepped up to my car and asked me where I was going to shoot. I told him in Sullivan County. He said there was better shooting nearby. I asked him where, and he said, 'off to the east over

toward Pawling.' He said that he was out with another man a few days before and that they killed four cock pheasants near the Clove Valley Club.

"I know personally of several men from New York who shot a number of pheasants this season near our club and I have been told by people around Stormville, which is about six miles south of the club preserve, that a good many shooting parties come in there during the fall and kill a considerable number of birds. One farmer to the north of the club preserve told me there were some twenty pheasants on his farm. The man owning the adjacent farm told me there were about a dozen on his farm.

"Just how many birds leave the club preserves yearly it is impossible to tell, but it is certainly several hundred.

POLICE SPORTSMEN KNOW A GOOD THING.—"Recently one of our members motored into New York City from the club with his bag of pheasants, taken the preceding day, in plain view on the running board of the car. As he was held up at a Broadway crossing by the traffic, a patrolman stepped up to him with the remark, 'I guess you have been up to Clove Valley. I am going up next week.' I think that shows pretty clearly how effective any preserve is in stocking the public covers about it."

OPEN SEASONS ON WILD PHEASANTS.—The law in New York regarding the taking of wild male pheasants (not captive-bred birds both sexes of which may be taken at any time under conditions previously outlined) reads as follows:

> Wild pheasants may be taken and possessed on the last two Thursdays in the month of October and the first two Thursdays in the month of November and possessed during the period of time between the first open Thursday in October and the last open Thursday in November, inclusive. Only wild male pheasants may be taken. A person may take and possess not to exceed three wild male pheasants in the open season.

In addition to the above, a close season till October 1, 1916 is provided in the counties of Herkimer, Otsego, Delaware, Chenango, Oneida, Montgomery, Lewis, Washington, Warren, Schenectady, St. Lawrence, Franklin, Clinton and Essex, and until October 1, 1917 in Cattaraugus and Chautauqua.

Open seasons on ringnecks in other states (1915) are as follows:

ALABAMA.....November 15—December 14.
CONNECTICUT ....October 8—November 24.
FLORIDA .....December 1—December 19.
ILLINOIS.....October 1—October 5. (Cocks only)
LOUISIANA .....December 1—December 31.

MARYLAND .....November 10—December 24.
MASSACHUSETTS..Conservation Commission may declare open season in its discretion.
NEW JERSEY.....November 10—December 15.
OREGON.....October 1—October 31. (Applies only to Chinese pheasants and to Coos, Curry and Josephine Counties.)
October 1—October 10. (Applies only to Chinese pheasants and to Jackson and Union Counties.)
PENNSYLVANIA...October 15—November 30.
TENNESSEE .....December 1—December 31.
WASHINGTON ...October 1—October 14. (Applies also to Mongolians and Reeves, but there is no open season in Mason and Thurston Counties and territory East of the Cascades.)
September 15—October 31. (Applies only to Chinese pheasants.)
October 1—October 15. (Applies only to Chinese in Benton, Spokane and Yakima Counties)
October 1—October 10. (Applies only to Chinese in Kittitas County.) With above exceptions, there is no open season on Chinese pheasants in territory East of the Cascades.

All of the above dates are inclusive.
Where no sex is specified, either may be taken.

FIGURE 21.—Trespass sign placed about the boundaries of wholly enclosed preserves in New York.

CHAPTER XIX

The State's Interest in Game Propagation

I am indebted to Mr. John B. Burnham, president of the American Game Protective Association for this chapter. The highly successful New York State Game Farm was established under the direction of Mr. Burnham, and it was due in large measure to him that it was secured. No one is better qualified to speak on the subject of State Game Farms than he:

In this country we hold the wild game as a community asset. Our courts have said that such game is the property of all the people. Propagated game, while in private ownership, however, is private property. Why should not the state which administers the wild game for all the people also propagate game to supplement the increasing shortage in native species? In other words, is there any good reason why the same funds which are now used by the state for purposes connected with maintaining the supply of wild game should not also be used for increasing the supply by embarking in the business of game propagation?

THE HUNTERS' LICENSE.—The hunters' license law which, as developed in this country, is a peculiarly American measure and which has within the last few years become all but universal, has resulted in the accumulation in the various states of the nation and provinces of Canada of considerable funds which the authorities of the different sections are very generally using for the benefit of sportsmen. While a certain portion of these funds are being used for the purpose of enforcing game laws, there is a notable tendency to use another portion of the funds for game propagation.

The hunters' license is a special tax upon sportsmen who are in no way relieved from the general taxes (county, town and state, etc.) levied upon other citizens. It is logical therefore that the license tax should be used for objects which directly benefit the sportsmen and that it should not be devoted to highways, schools or similar purposes, as has been done in some sections of the country.

I am very firmly of the opinion that the growing tendency to use a portion of the game fund for game propagation should be encouraged. I also believe that no game should be put out for stocking lands which may be posted against public shooting and that a proviso should be added to the laws of the states which are propagating game that no land shall ever be posted which has been stocked freely by the state.

STATE AND PRIVATELY PROPAGATED GAME.—It is already very generally recognized that there is a clear distinction between game

privately propagated and game propagated by the state. The latter class naturally falls under the more or less rigid laws governing the wild game of the state. With regard to privately propagated game, however, the authorities are quite generally accepting the ruling of the Court of Appeals of New York in the case of the People vs. Fargo, which virtually holds that a private owner has similar property rights in propagated game to the rights he enjoys in other classes of live stock. The trend of public sentiment is in favor of giving owners absolute control over their privately propagated game—at any rate to the extent that their actions do not endanger the supply of wild game of the state. For practical purposes licenses are required which are in effect an insurance that the licensee will not interfere with the state's supply of game and after that he is allowed to do with his own game as he sees fit.

The sooner game laws are made to conform with these principles the better it will be for all concerned. The state should encourage the men who have the necessary means to interest themselves in game propagation for pleasure or for profit and on the other hand it should also interest itself effectively to increase the supply of game for the benefit of those paying the license tax who have neither the time nor the means to devote to this object. It is with this latter phase of the subject that this chapter has to do.

HOW STATE FARMS ARE STARTED.—The method of initiating the enterprise of starting a state game farm varies with the state. In some states the law permits the game commission to use funds at its command for this purpose. In others, the state constitution specifically provides that all the receipts of the state must go into a general fund and be reappropriated for specific purposes by vote of the Legislature. In any case, provided the Game Commission and the sportsmen's associations or individual sportsmen co-operate, it is not generally a difficult matter to secure the necessary action.

It is not my purpose to go into detail as to the starting of state game farms, but simply to point out a few necessary or desirable features in connection with their establishment. It must be borne in mind that propagating plants are not put up upon rough untillable land; reasonably level, well drained, fertile soil, is a prime requisite.

GOOD SUPERINTENDENT ESSENTIAL.—A good superintendent is absolutely essential. By this I mean a man of experience who has demonstrated his ability to get results. While it is conducive to a wholesome pride in the enterprise, it is not essential that the propagating plant should be elaborate or expensive. Circumstances alter cases, but as a general principle where there is a generous appropriation I think it is wise

to use it in establishing several small farms rather than to put it all in an elaborate show place.

It is essential that the business be carried on just as any other private business would be run on a basis to show a profit at the end of each year. Where too much money is invested in overhead charges this cannot be done. As a general proposition it is not good business to turn out birds at a state farm at a cost greater than the same birds could be purchased in the open market. Sometimes, however, this item may be neglected where the state turns out better birds or birds better adapted to the locality.

CAUSES OF FAILURE.—It is a well recognized fact in the history of state propagation of pheasants that some states which have started game farms have been successful and others unsuccessful. I have been at some pains to investigate the causes which lead to failure and from the facts which are available I have come to the conclusion that aside from poor management there are so far just two causes of failure which stand preeminently above all others. These causes are the failure to protect the planted birds from pot hunters and the failure to select stock which will produce birds capable of rearing their young and protecting them against vermin.

The protection of birds put out for stocking purposes from law violators is an administrative function of the game protective department and it is also an educational function of that department and of sportsmen's organizations. A handsome and unusual bird like the pheasant attracts the attention of ignorant shooters who will often exert more energy in killing off the birds in violation of the law than they will in hunting legitimate game found in the same covers. In my experience in game protection I have found numerous instances where broods of pheasants which had overcome natural disadvantages and gained a promising foothold in a section were annihilated by local pot hunters. It is therefore of particular importance in localities where pheasants are stocked that the local sentiment be educated and that incorrigible game law violators be ferreted out and punished.

I believe, however, that the most glaring cause for the failure of certain states to stock successfully their areas with pheasants has come from selecting as breeding stock birds which are too highly specialized as egg producers under the modern system of hand rearing.

THE ENGLISH PHEASANT.—I have no brief against the English pheasant. It has sterling advantages for many purposes and is undoubtedly the best for many clubs that raise the birds each year which they intend to shoot. For the purposes of a state propagation plant, however, where only a limited number of birds can be sent to any one locality and

where the success of the experiment must be determined by the natural increase from the seed birds, it is to my mind essential that the stock used be as near as possible to the wild stock of Asia.

CHINESE PHEASANT RECOMMENDED.—My advice to state game farms is to center their efforts on the Chinese pheasant. This pheasant is the English sparrow of the game world. It is shrewd and hardy and if given even half a chance will gain a footing for itself and increase under any kind of fair shooting. We have no place in the United States too cold for it, though there are places in the north with insufficient and unsuitable food and it will not thrive in spruce or pine forests. As to its southern range, experiments carried on in this country have not yet demonstrated its southern limit, but the indications are that it will flourish over the greater part of the United States.

Many breeders are prejudiced in favor of the English pheasant because the stock is more easily obtained and also on account of its really desirable characteristics. It is a larger bird, a more prolific egg producer, and in other ways better adapted to the purposes of the game farm.

On the other hand English pheasants have in degree lost the mother instinct and many of the birds when released will either not set on their own eggs or if they do will not successfully hatch them, and still others which have brought off young broods do not know enough to take care of them and in storms are content to wander off with a few members of the covey and leave the rest to perish.

Instances of all these failings can be found in the books of English game keepers. It is natural that a bird which has been developed through a great many generations along the specialized line of great egg production, a bird which in most instances is not allowed to set on its own eggs and which has not known what it is to be looked after by a mother or to mother its own young, should not be an ideal bird for stocking game covers.

NEW YORK'S SUCCESSFUL EXPERIENCE.—I have yet to learn of the state which has used the Chinese pheasants for propagating purposes which has not met with success in stocking its covers. Central New York was stocked with Chinese pheasants during the six years prior to 1904. In this period the State Forest, Fish and Game Commission sent out an average of something less than two hundred birds a year to applicants in various counties. Of these birds Monroe County received one hundred and thirty-five, which was the largest number apportioned to any county. In 1909 an open season for pheasants was given in New York in sixteen counties, of which Monroe was one, for cock pheasants only. A number of thousands of pheasants were killed, but despite this fact and

without any further stocking, the pheasants continued to increase. The *Rochester Democrat* during the season of 1910 printed an article under the heading "Pheasants are Increasing." This was before the county had received any additional stocking from the present state game farm at Sherburne.

At the conference last March on game breeding and preserving Mr. H. M. Brigham of the Clove Valley Club made the interesting statement that the manager of a large New York wholesale firm dealing in sporting goods had told him that Rochester, the principal city of Monroe County, had become one of the best places in the United States for the sale of shotgun ammunition, despite the fact that prior to the introduction of the pheasant there was no game to be found in that neighborhood aside from cottontail rabbits.

All through this section the pheasants have steadily increased despite the fact that they are subjected to persistent hunting of a character that would exterminate any other game bird in a single season.

CHINESE BIRDS IN WEST.—Washington and Oregon, as is well known, were stocked with Chinese pheasants. Even in these natural game states the imported birds have today largely superseded native species in the sportsman's programme.

The states which have failed to make the pheasant a permanent inhabitant after a fair trial have all used the English stock. Therefore when the sweeping statement is made that pheasants are not adapted for stocking any particular locality, it is well to inquire first if a fair experiment has been made and then if the right kind of breeding stock has been used. The demonstrated successes achieved by certain states in stocking with pheasants have made it no longer possible to say that it cannot be done. The state game farm should be a success. If it is not look for the reason and correct it.

CHAPTER XX

Game Keepers

This term is not wholly correct as applied to the majority of men employed in game breeding in the United States if by "game keeper" we mean the individual so designated on the other side of the water. There pheasants are shot in large part under drives with beaters and with the aid of an elaborate system of coverts. Very little of that sort of shooting is done in this country and a majority of our best known "keepers" are to be found on the state game farms of the country and engaged in the breeding of pheasants on a commercial basis. Therefore, the average American keeper would be completely lost if charged with the duty of rearing birds for shooting under drives. It is highly important, however, that our keepers be taught some method of planting the birds they raise so as to afford the maximum of sport for the owner. Possibly the Clove Valley Club method, as heretofore detailed, approximates what we are coming to in American pheasant shooting. However that may be, it behooves the present day game keeper to study the situation and devise some method of furnishing sport with the birds he raises.

EXPERIENCED MEN SCARCE.—One of the great handicaps in American game breeding is the lack of a sufficient number of experienced men. This is an activity that is still in its infancy despite its remarkable growth within the past few years, and we have had to depend on keepers from the British Isles to a large extent. These are of two classes: intelligent, capable men of high character and ability; and failures, dead-beats, and men whose habits are such that they have sought another country in the hope that they can more successfully impose upon employers where they are not so well-known. Again, it does not absolutely follow that a keeper who has been fairly successful abroad will be equally so here under all conditions. This is a large country, with great divergence in climate, with varying and, in many cases, unusual vermin problems to be solved. A man from the other side brought up suddenly against such unlookedfor conditions needs great courage and ability to solve the problems he will encounter.

Again, birds in our climate, in my opinion, at least, cannot stand as rich feeding as in England. Unless the newcomer can gauge such things correctly, he is due a good deal of trouble, to say the least.

We have, of course, a good many native born game keepers and many of the best and most successful men are to be found among these.

MR. WALCOTT'S TRIBUTE TO GAME KEEPERS.—Speaking

at the first national conference on American game breeding, held in March, 1915, in New York City, the chairman, Mr. Frederic C. Walcott, paid this tribute to the game keeper:

> "We get most of the good things of life from our brothers across the Atlantic, the Germans and the English, including the Scotchmen and the Irishmen. All of our present success in game keeping really originated with the small handful of men that the elder MacVicar brought over for the late Rutherfurd Stuyvesant. One of the first if not the very first of these was Mr. Duncan Dunn. He brought also his son, Mr. A. G. MacVicar, Mr. Adam Scott, Mr. Monroe and one or two others. We don't appreciate how much we owe these men. They form the nucleus of the intelligent, hard-working, resourceful game keepers that we have today. Mr. Harry T. Rogers and Messrs. Samuel and Wallace Evans are a few of the many successful men native to this country; but we owe this first man that came over a great deal, and it gives me pleasure to make acknowledgment of the debt."

The state game farms and the larger clubs are doing a valuable work in educating game keepers. Raising as many birds as they do, they must employ a number of men, all of whom have full opportunity to graduate into experienced keepers.

EXPERIENCED MEN REQUIRED.—It does not follow, however, that a man capable of bringing a field of 1500 birds through a season in good shape under the direction of a superintendent or head keeper will necessarily be a success if placed in charge of breeding operations at some other place. The two things are widely different. Engaging a game keeper, then, is a good deal of a lottery at the best but, even so, it is surprising to see how easily deceived many estate owners are in employing this class of help. In a recent instance that came to my notice, a keeper who had deserted a rearing field filled with young birds for three days during the absence of the head keeper had no trouble in securing employment immediately on his discharge on the estate of a wealthy New Yorker. The most cursory sort of investigation by the second employer would have brought forth these facts, but it was not made.

REGISTRY FOR EXPERIENCED KEEPERS.—The Department of Game Breeding of the American Game Protective Association has a registry list for experienced game keepers of good character, which is open gratis to all who can qualify and keepers are invited to register. At the same time those wanting to employ a keeper will be served without charge and they are invited to make use of the Department's information on this subject. Address 2273 Woolworth Building, New York City. No

keeper is recommended without searching investigation as to character and ability. Being in touch with the principal head keepers of the country, a man's record is usually easy to get.

DO NOT EXPECT TOO MUCH.—May I be permitted a word to employers? Do not expect too much of your keeper. For instance, 1200 to 1500 pheasants is all one man can reasonably be expected to attend to in the rearing fields and he will have time for nothing else when he has these on his hands. Game keeping makes heavy demands on the nerves during the rearing season. It is the part of wisdom for the employer to let the keeper go his way with as little interference as possible at this time. Another suggestion—don't ask your keeper to attempt too many species. This greatly multiplies labor of feeding and housing. Newcomers at the game are specially prone to err in this matter.

The pay of the keeper of average experience runs from $50 to $75 a month, sometimes with board or house furnished. In the latter instance, milk, butter and vegetables are generally supplied gratis. Head keepers are paid anywhere from $900 to $2,000 a year with house furnished.

CHAPTER XXI

The Economic Position of the Ringneck

In whatever part of the country the ringneck has been introduced, it has almost invariably called forth a protest at first from some part of the farming community by reason of its alleged destructiveness to crops. In no instance, however, I believe, has this bird failed to win the friendship of the majority of the farming element in any community in the end.

In 1913 the Commissioners on Fisheries and Game of Massachusetts were directed by the legislature to make an investigation of the habits of pheasants with special reference to crops, planted fields and other property and as to their insectivorous qualities, particularly with regard to the brown-tail and gypsy moths.

SURVIVES SEVERE TEST.—In the course of this investigation the Commissioners collected seventeen pheasants killed in the very act of destroying farm products, and sent their stomachs to the Bureau of Biological Survey, United States Department of Agriculture, for examination. Following is the Bureau's report on this very severe and rather unfair test:

> Avoiding fractions, 22 per cent. of the total food was grain, including barley, wheat, oats and corn. The evidence is pretty clear that all this was waste, except in the case of one bird, which had fed entirely upon fresh corn, apparently taken from the ear. Twenty-one per cent. of the food consisted of green and ripe tomatoes, and all of this must be recorded against the birds. Twenty-three per cent. consisted of weed seeds, including such pests as ragweed, burdock, foxtail and barnyard grass. Fourteen per cent. consisted of the seeds of buttercup and root stocks of trillium. This is of neutral import. Fifteen per cent. of the food consisted of insects, mainly grasshoppers and caterpillars of hawk moths.
>
> The weed seeds and insects, together 37 per cent., count in the pheasants' favor. The tomatoes and corn referred to above, in all about 27 per cent., are against the bird. The remaining items are practically neutral.

HARMFUL INSECTS DESTROYED.—The Commissioner's investigation proved that pheasants ate in large quantities the following serious pests:

Pests of the Market Garden	*Fruit Pests*	*Tree Pests and Others*
Tomato or tobacco worm (Sphinx).	Codling moth, adults and larvae.	Tussock moth.
White grub, adults and larvae.	Apple maggot, adults and larvae.	Elm-leaf beetle.
		Tent caterpillar.

Pests of the Market Garden	*Fruit Pests*	*Tree Pests and Others*
Striped cucumber beetle.	Tent caterpillar, adults and larvae.	Mosquitoes.
Black squash bug.	Tussock moth, adults and larvae.	Flies, house, adults and larvae.
Parsnip web worm.	Cherry lice.	Flies, blow, adults and larvae.
Wire worms, adults and larvae.	Plant lice.	Gypsy months and larvae.
Cut worms, adults and larvae.	June bug.	Brown-tail moths and larvae.
Potato beetle.	Adults of tree borers.	Rose bugs.
Green cabbage worm, larvae.	Curculio on plum, peach and apple.	
Corn louse ant.		
Asparagus beetle, adults and larvae.		

It was found that mosquitoes and house flies were destroyed in large numbers, three birds, less than five weeks old having been observed to eat nearly 300 of the latter in the course of half an hour.

In one part of their report the Commissioners state that "there is no question that in certain localities where pheasants have increased abnormally very great damage may result unless an effective check is applied, and while in many instances real damage has been done to crops, we have many unsolicited testimonials to the fact that pheasants, though numerous, have never done appreciable damage."

RINGNECK PROVED VALUABLE.—The report presents its main conclusion interestingly and briefly as follows:

> In conclusion, therefore, we are of the opinion that the pheasant on the whole is a beneficial bird; but to secure the benefits to the full extent, provision must be made for utilizing the surplus annually as food, and for recreational shooting in specified localities. The young birds are entirely insectivorous.
>
> The adults are likely to do damage to growing crops, to the extent at most of 25 per cent. of the food. Practically all the damage to the crops is done by adults, and most often by adult males. Special care must be taken to prevent the cost of supporting the public stock of pheasants from resting too heavily upon the individual. The farmers should, therefore, be recompensed for obviously excessive damage, and, in cases, provisions should be made for killing or trapping the pheasants which are doing the damage. The surplus males, therefore, since the bird is polygamous, should be killed off annually in the autumn, taking care to reserve enough adults for breeding stock for the next year.
>
> The young birds should be raised in the largest possible quantities for the purpose of destroying as many as possible of the insect pests which are levying a heavy tax upon Massachusetts agriculture. The mature birds should be utilized for food. The propagation of

these birds may be carried on by women and children, and to those properly equipped, should bring a profitable income on time and capital. The pheasant crop of England is an exceedingly important one, not alone from the money value derived from the sale of the birds, both at home and abroad, but particularly in controlling gypsy and brown-tail moths, army worms and other pests which have devastated large areas where the bird population was abnormally deficient.

RINGNECK VERSUS QUAIL AND GROUSE.—The belief that the ringneck will drive out quail and ruffed grouse will probably never quite die out, but I have investigated carefully every such report that has come to my attention within recent years and have yet to find one that would hold water. Within the past year I was told that ringnecks on the island on which the United States arsenal at Rock Island, Illinois, is located furnished conclusive evidence of the driving out of quail by ringnecks. A letter to the commanding officer at the arsenal brought forth a detailed and interesting reply which was published in full in the July, 1915, number of the BULLETIN of the American Game Protective Association. This gentleman, Lieutenant-Colonel George W. Burr, a thorough sportsman and keen observer, stated that the quail on the island had greatly diminished in numbers in recent years and that during that period the ringneck had increased, but he found himself unable to conclude that the quail had fled before the attacks of the pheasants.

COLONEL BURR'S CONCLUSION.—The situation was summed up by him in the following words:

> I am inclined to regard the increase of the pheasants and the diminution of the quail as a coincidence and not as cause and effect.
>
> My personal opinion is that the quail leave the island more readily than do the pheasants, and to me the statement is rather plausible that they may prefer to live some place where they do not have to share their feeding grounds with the pheasants, but that there is any real antagonism between the two species or that the pheasants in any way actively drive away the quail, I do not believe.

MASSACHUSETTS' EXPERIENCE.—The Massachusetts Commissioners have this to say on the relation of the ringneck to grouse and quail:

> Many verbal complaints have been made relative to damage to quail and to ruffed grouse, but almost invariably they take the form of the statement that 'before the pheasants became so numerous we had large flocks of quail and partridge feeding on our grounds through the winter months. The pheasants, however, have driven

them away, and a quail or partridge is a rare sight in this vicinity at the present time.' In the great majority of instances, however these are to be ascribed to incomplete observations. In the neighborhood of cities and towns quail disappear on account of the multitude of cats and other enemies. The ruffed grouse disappear with the destruction of the covers, and their place is taken by the pheasant, which has the power to increase under conditions so unfavorable that quail and ruffed grouse have been extirpated. Over against this testimony is the observation in Oregon, where in the Williamette Valley there is a dense bird population, made up of pheasants, ruffed grouse and at least two varieties of quail, all of which are living together in harmony. In places, however, where there would be a competition for food, doubtless the pheasant, being the stronger bird, would displace the quail, though in general there should be abundant food for both these species.

Still more conclusive evidence is found in the fact that British records, carefully kept, show that there has been no diminution in the numbers of native grouse and quail despite the enormous numbers of pheasants that are bred on the isles each year. It must be remembered in this connection that the pheasant is no more native to Great Britain than to the United States.

CHAPTER XXII

Preparing the Pheasant for the Table

The meat of the pheasant is white and short-grained. The breast is large and plump and a brace of these splendid birds furnishes ample food for a family of four. The pheasant is usually roasted, though it may be prepared in other ways.

There follow some receipts that friends of long experience in preparing pheasants for the table and high rank as housekeepers have been good enough to furnish me. The first of these is from Mrs. Duncan Dunn, wife of the superintendent of the New Jersey Game Farm, who acquired the art of roasting the pheasant to a turn in her native Scotland:

MRS. DUNN'S RECEIPT.—"Kill your bird by wringing its neck but do not sever the head nor let it bleed. Hang by the beak four to seven days in a cool, dry, well-ventilated place. Be sure not to let the body of your bird come in contact with ice and do not pluck or draw till you are ready to cook your bird. Pluck the pheasant dry and prepare it for roasting as you would a hen. No dressing is placed within the fowl but some cooks place an onion inside.

"Place three strips of fat pork over the breast of the bird, put it in a covered roaster, and it is ready for the oven. No water or butter is needed for basting and seasoning is done to taste. The time of roasting varies with the size of the fowl, but it usually requires an hour. The oven should be fairly hot to start with but care should be exercised in this, as the breast of the bird is very thick and there is danger of overcooking the outside of the breast before it is done through.

"The sauce is prepared by placing an onion in a pint of sweet milk and taking the vessel off the stove when the milk comes to a boil. Stale bread crumbs are immediately added and care must be taken not to make the sauce too thick."

MRS. ROGERS' RECEIPT.—Mrs. Harry T. Rogers is not only an authority on the cooking of pheasants, but the rearing of them as well. She is the only woman on the Committee on Pheasant Breeding of the American Game Protective Association's Department of Game Breeding, and she has well earned her appointment to that important body of pheasant experts. Mrs. Rogers' receipt follows:

"Remove the crop of the bird as soon as it is killed, as the food remaining in it will ferment otherwise. Draw the bird forty-eight hours after killing and pluck dry. Use a Scotch kettle for cooking the pheasant. This is the old-fashioned iron kettle of our childhood. First place in the

kettle a tea cup of hot water and a heaping tablespoon of butter. When this is very hot, place the bird in the kettle, put the cover on, and add hot water from time to time as the supply gets low. Just before the pheasant is finished, add salt and pepper. By the time it is done, the liquid in the kettle should have been exhausted, and the bird should be well seasoned.

HOW PHEASANTS ARE PREPARED AT THE WALDORF-ASTORIA.—Mr. Oscar Tschirky, maitre d'hotel of the Waldorf-Astoria Hotel has consented to the reproduction of the following receipts from the well-known "Cook Book by 'Oscar' of the Waldorf."

"BRAISED PHEASANT.—Prepare and truss a pheasant as for boiling. Line a stew pan with slices of fat bacon and one or two thick slices of veal, put in the bird, season it well with salt and pepper, add a few sweet herbs, cover it with more slices of bacon and veal, cover the stewpan down perfectly air-tight, and put it in a moderate oven and cook for two hours. When done place it on a hot dish, strain over it some of the gravy that will have run from it while cooking, garnish it with sliced lemons, and serve.

"BROILED PHEASANT.—Cut the bird in four pieces and fry them in lard; when browned all over and half done through, take them from the fire, drain the lard from them, brush over with beaten egg, roll them in a paper of breadcrumbs mixed with salt and cayenne, put them on a hot, well-greased gridiron and broil them for ten minutes over a clear fire.

"ROASTED PHEASANT.—Singe and truss the bird and put inside a shallot and a lump of butter; lard the breast close with thin strips of bacon, and tie a thin strip of bacon over the larded part. Roast the bird in a hot oven, basting it often with butter. Five minutes before taking the bird from the oven remove the slice of bacon and brown the larded part. When cooked place the bird on a hot dish, strew over it some crumbs of bread that have been fried brown in butter, and serve it with a sauceboatful each of rich brown gravy and bread sauce."

APPENDIX

There is given below a form of constitution that may be used as a basis for any group of sportsmen who may wish to combine their efforts to secure adequate pheasant shooting.

ARTICLE I.

This Association shall be known as the..... and its office shall be located in the city of .....

ARTICLE II.—OBJECTS.

The objects of the Club shall be to create and foster a public sentiment in favor of the protection of fish and game; to protect fish and game.....; to enforce the game laws of the State, to procure the stocking of streams and woods with fish and game, to breed game for shooting, and for sale, and to purchase or lease wholly enclosed lands for shooting and breeding.

SECTION 1. The number of Directors of this Club shall be....., of whom..... shall constitute a quorum. The names of the directors until the first annual meeting are:—

SECTION 2. The Board of Directors shall be elected at the annual meeting of the Club, and shall hold their office and discharge the duties thereof for the term of three years and until their successors have been elected, five of whom shall be elected each year, provided, however, that at the annual election, held the.....in.....there shall be five Directors to serve one year, five two years and five three years.

ARTICLE IV.—OFFICERS.

The officers of this Club shall be a President, Vice-President, Secretary and Treasurer, all of whom shall be elected by the Board of Directors at the first meeting following the annual meeting. They shall hold their offices for one year and until their successors have been elected and qualified.

ARTICLE V.—MEETINGS OF BOARD OF DIRECTORS.

The stated annual meeting of the Board of Directors shall be after and at the close of the annual meeting of the Club. They shall proceed forthwith, at such meeting, to elect the officers of the Club, and any member of the Club shall be eligible to election.

ARTICLE VI.—ANNUAL MEETING.

The annual meeting and election of the Club shall be held the ..... of..... .....in each year at the office of the Club.

ARTICLE VII.—PRESIDENT.

The President, or in his absence or inability to act, the Vice-President shall preside at the meetings of the Club and of the Board of Directors, and in the absence of both, a Director shall act as President.

ARTICLE VIII.—SECRETARY.

The Secretary shall conduct the correspondence of the Club and the Board of Directors, preserve proper files and records of the same, and make and preserve the minutes of the proceedings of all meetings. He shall collect and receive all moneys belonging to the Club and hand them over to the Treasurer and take his receipt therefor; he shall keep accurate accounts with each member, preserve all records, books and papers of the Club, and deliver them over to his successor at the expiration of his term of office.

ARTICLE IX.—TREASURER.

The Treasurer shall receive from the Secretary, and have the custody of all moneys and other funds of the Club. He shall pay all the debts and obligations on the written order of the President and Secretary. He shall make a written report at each annual meeting of the Club of its income, expenses and the amount of money remaining on hand. He shall execute a bond to the Club in such penal sum as the Board of Directors may determine, and shall deliver over to his successor at the expiration of his term of office all funds, records, books and papers pertaining to his office.

ARTICLE X.—POWERS OF BOARD OF DIRECTORS.

Section 1. The Board of Directors shall have the control and management of the property and affairs of the Club, and perform such duties as may be delegated to them at meetings of the Club.

Section 2. The Board of Directors shall have power to fill any vacancy which shall occur from death, resignation or otherwise, and any appointments so made shall be valid until the next annual meeting and until their successors have been chosen.

Section 3. The Board of Directors shall hold meetings whenever summoned by the President or upon the request of three members of the Board. Two days' notice of such meeting shall be served personally or by mail by the Secretary upon all Directors not signing the call for the said meeting.

Section 4. No expenditure or expense in excess of $25 shall be made or incurred by the Board of Directors unless the same shall have been previously ordered or ratified by vote of the Club.

ARTICLE XI.—FISH AND GAME COMMITTEE.

Section 1. The Fish and Game Committee shall have charge of the propagation, care and releasing of game birds and animals and game fish upon the Club preserves, and shall, subject to the approval of the Board, make such rules and regulations with respect to shooting and fishing on the Club preserves as they may deem proper.

ARTICLE XII.—MEETINGS OF CLUB.

Section 1. The regular meetings of the Club, other than the annual meeting, shall be held at.....on the.....of..... at which any business may be transacted except the election of Directors.

Section 2. Special meetings of the Club may be called by the President upon the written request of ten members directed to the President. Only the business specified in a call for a special meeting shall be transacted thereat.

Section 3. The notice for a regular or special meeting shall be served by the Secretary personally or by mail at least three days prior to the time of holding said meeting.

Section 4. At any annual, regular, or special meeting fifteen members shall be necessary to constitute a quorum for the transaction of business.

Section 5. The hour for calling to order all meetings shall be eight o'clock p. m. unless otherwise directed in the call for a special meeting.

ARTICLE XIII.—DUES.

Section 1. Every member shall pay the annual dues of $.... to the Treasurer. (Here specify date or dates on which dues are to be paid.)

Section 2. The Secretary shall notify each member at the time of sending out the notice for the annual meeting of the amount of his dues, and if the same be not paid within three months after such notice, such member, at the expiration of the said three months,

shall cease to be a member of the Club, but may, however, be reinstated by a two-thirds vote at any regular meeting by paying all arrears of dues.

SECTION 3. No member in arrears for dues shall vote or participate in the election of Directors or in any meetings of the Club.

ARTICLE XIV.—ELIGIBILITY TO MEMBERSHIP.

SECTION 1. Candidates for membership shall be at least eighteen years of age, and must be proposed by a member of the Association at a regular meeting thereof, and seconded by another person acquainted with the candidate who can vouch for his good character and standing, and such proposition must be in writing, giving the name, residence and occupation of the person proposed.

SECTION 2. The election to membership shall be by ballot at a regular meeting of the Club, and.....negative votes shall be necessary to reject.

SECTION 3. The membership of the Club shall be limited to residents of..... or persons who are domiciled therein, except that non-residents of the county may become members of the Club by unanimous vote, but shall not be entitled to hold office in the Club.

ARTICLE XV.—ORDER OF BUSINESS.

The order of business shall be Reading of Minutes of Previous Meeting, Application for Membership, Reports of Officers, Miscellaneous Business, Bills and Accounts, Election of Officers, Reading and Approving Minutes of Meeting.

ARTICLE XVI.—VIOLATIONS OF GAME LAW.

It shall be the duty of each member of the Club to report to the President any violation of the fish and game laws which shall come to his notice. The Board of Directors are empowered to prosecute offenders against the fish and game laws, and to offer rewards from time to time for such amounts and under such restrictions as they may deem best for the detection of illegal devices for the capture or killing of fish or game and the conviction of the offenders.

ARTICLE XVII.—EXPULSION FOR VIOLATION OF LAW.

If any member of the Club shall be guilty of a violation of the fish and game law he may be expelled from the Club by a majority vote at any meeting thereof after he shall have been given notice of such intended action and the nature of the charge against him—such notice to be given in each case as the Board of Directors may deem sufficient.

ARTICLE XVIII.—RESIGNATIONS.

Any member may resign from the Club by giving notice in writing to the Secretary, provided he shall not be in arrears for dues or under charges at the time. For ungentlemanly conduct at the meetings or for an intentional violation of the purposes of the Club, except as hereinbefore provided, a member may be suspended, expelled, or otherwise punished by a two-thirds vote at any regular meeting upon due notice to the member of such intended action.

ARTICLE XIX.—RULES.

The ordinary rules of parliamentary practice in debate shall be followed except as otherwise provided in this Constitution.

ARTICLE XX.—AMENDMENTS.

This Constitution or parts thereof may be altered or amended by an affirmative vote of two-thirds of the members present at an annual or regular meeting, provided that notice of such amendments or changes shall be given at a previous regular meeting, and provided further that the proposed amendments may be entertained at any annual meeting without such notice by unanimous consent of all members present.

APPENDIX II

Twelve Gauge Loads Suggested for Field Shooting

It is not possible to make positive recommendation as to the best loads for shooting different kinds of game, because there are no general rules that apply under all conditions. A load that is very effective in most guns may be less so in some particular gun. In cold regions, birds are usually more heavily feathered than in warm climates and consequently it takes heavier loads to kill them. The following table represents the average for 12 ga. guns, but it may prove advisable to modify it under varying circumstances. The table of comparative loads on the next page affords a basis for determining the proper charges for different gauges.

GAME	POWDER		SHOT	
	Infallible	E. C. or Orange Extra	Quantity	Size
Rabbit Squirrel	24 grains	3 drams	1⅛ oz.	6 or 7
Quail Bobwhite	24 grains	3 drams	1⅛ oz.	8 or 9
Woodcock	22 or 24 grains	2¾ or 3 drams	1 or 1⅛ oz.	9 or 10
Snipe Plover	24 grains	3 drams	1⅛ oz.	8 or 9
Ruffed Grouse, Pheasant or Partridge	24 or 25 grains	3 or 3⅛ drams	1⅛ or 1¼ oz.	6 or 7
Ducks	26 or 28 grains	3¼ or 3½ drams	1¼ oz.	4, 5 or 6
Geese	28 grains	3½ drams	1¼ oz.	1, 2 or 3
Swan Turkey	28 grains	3½ drams	1¼ oz.	T or 1
Prairie Chicken Pinnated Grouse	24 or 25 grains	3 or 3⅛ drams	1⅛ or 1¼ oz.	6 or 7

Comparative Loads

Infallible is a "dense", and E. C. is a "bulk", smokeless shotgun powder.

This distinction is important, because a smaller quantity of a dense powder will produce a given explosive force, than would be required to produce an equal force with a bulk powder. Bulk smokeless powders and black powders are loaded by measure and dense powders by weight. If a shooter, who was accustomed to measuring three dram loads of bulk smokeless or black powder, made the mistake of using the same load of dense powder, the results might be disastrous.

Now that factory loaded shells are almost universally used, and that those who still load their own shells understand the different powders, this danger is practically eliminated. For most shooting, Infallible and E. C. give equally satisfactory results and a choice between them is a matter of individual preference. However, if shells are to be stored in very damp climates, or exposed to excessive moisture, those loaded with Infallible are preferable because Infallible is absolutely waterproof, while any bulk powder will absorb a certain amount of water.

The comparisons in the table below show the commonly used loads of Infallible, both by weight and by measure, with the E. C. and Orange Extra loads of corresponding strengths. If you are shooting three drams of E. C., or any bulk smokeless or black powder, you will readily see by referring to the table that the equivalent load of Infallible is 24 grains. Any of these powders can be secured in your favorite brand of shells.

Infallible	Weight in Grains	Measure in Drams	Equivalent in Strength to
28 Gauge Loads	14 grains or	¾ dram	1¾ drams of E. C. or L. & R. Orange Extra
	16 " "	⅞ "	2 " " " " " " "
24 Gauge Loads	16 grains or	⅞ dram	2 drams of E. C. or L. & R. Orange Extra
20 Gauge Loads	16 grains or	⅞ dram	2 drams of E. C. or L. & R. Orange Extra
	18 " "	1 "	2¼ " " " " " " "
16 Gauge Loads	18 grains or	1 dram	2¼ drams of E. C. or L. & R. Orange Extra
	20 " "	1⅛ "	2½ " " " " " " "
12 Gauge Loads	20 grains or	1⅛ drams	2½ drams of E. C. or L. & R. Orange Extra
	22 " "	1¼ "	2¾ " " " " " " "
	24 " "	1⅜ "	3 " " " " " " "
	25 " "	1 7/16 "	3⅛ " " " " " " "
	26 " "	1½ "	3¼ " " " " " " "
10 Gauge Loads	26 grains or	1½ drams	3¼ drams of E. C. or L. & R. Orange Extra
	28 " "	1⅝ "	3½ " " " " " " "
	30 " "	1¾ "	3¾ " " " " " " "

Caution—Infallible and E. C. are for use in shotguns only, and must not be used in rifles or revolvers.

A Powder for Every Purpose

No matter what kind of work it is, if it requires an explosive, there is a Hercules Powder just suited for the job. Or, if it's sport in the field or at the traps, there is a Hercules Powder that will get the full efficiency out of your rifle, shotgun or revolver.

Each Hercules Powder is without a superior for its purpose. Careful selection of raw materials, skillful methods of manufacture, exacting tests of each lot before it leaves the mill—these are the factors which make the name "Hercules" a sign of the highest quality and of absolute reliability in explosives.

The following are a few of the many products that bear the name Hercules:

Hercules Smokeless Shotgun Powders—Infallible and E. C.
Hercules Black Sporting Powder—L. & R. Orange Extra.
Hercules Smokeless Rifle Powders—Sharpshooter, Lightning, W. A. 30 Cal., Unique.
Hercules Smokeless Revolver Powder—Bullseye.
Hercules Dynamite—Nitro-glycerin Dynamite, Extra (Ammonia) Dynamite, E. L. F. (Extra Low Freezing) Dynamite, Gelatin Dynamite, Blasting Gelatin, E. L. F. Gelatin, Farm Dynamite.
Hercules Blasting Powders.
Hercules Blasting Supplies—Complete assortment of supplies, including Fuse, Blasting Caps, Electric Blasting Caps, Blasting Machines, etc.

Three of our books should be of especial interest to you—one or all are yours for the asking:

"Progressive Cultivation," written in a plain, understandable style, explains how Hercules Dynamite will help you produce bigger, better crops. "Hercules Sporting Powders" should be read by everyone who owns a rifle, shotgun or revolver. "Trapshooting" treats of this delightful sport from the viewpoint of both the veteran and the beginner. Write today for copies of these booklets.

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